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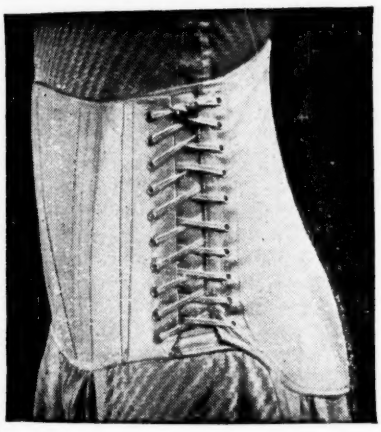

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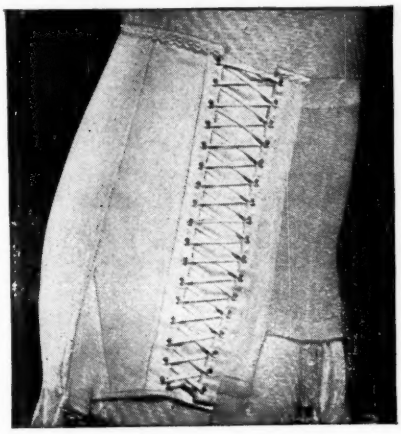

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NEW ENGLAND SURGICAL SOCIETY

THE VALUE OF PROLONGED PREOPERATIVE DRAINAGE IN PROSTATIC OBSTRUCTION*

BY J. DELLINGER BARNEY, M.D.,† AND SYLVESTER B. KELLEY, M.D.†

WHILE transurethral resection has replaced both perineal and suprapubic prostatectomy to a certain extent and seems to be gaining in favor, there is reason to believe that the older and well-tried methods will still have their place. It is not my purpose to discuss here the pros and cons of these three methods. I wish only to emphasize again and to call attention more forcibly to the fact that we should pursue, even to a greater extent, the features of preoperative care which long experience has shown to be sound, efficient and indeed essential, and which are applicable to any type of operation for obstructing prostate.

Some of us are old enough to remember when the patient with an obstructing prostate, often with acute retention of urine, was no sooner admitted to the emergency ward than he was subjected to operation with little or no preparation or study. We also recall the terrific mortality of those days. Gradually it began to dawn on the then embryonic urological mind that an essential to success in these cases was careful and more or less prolonged preoperative study and care, this consisting primarily of drainage and of combating dehydration. So intensive and painstaking have been the studies of the causes of death in the past ten or twenty years that the mortality has been reduced to somewhere around five per cent. I believe this mortality can be still further reduced, in fact it must be reduced if transurethral resection is not to crowd prostatectomy still closer to the wall.

Such intensive study has been given the urinary aspects of prostatic obstruction that it is now rather less common to lose a patient from uremia than from other causes, chief of these being circulatory accidents. More and more have we come to realize that the patient with an obstructing prostate is suffering not only from urinary retention but also from toxemia, dehydration, cardiac disease and especially arteriosclerosis, this being of varying degrees of intensity and either a generalized process or one with localizing manifestations in brain, heart or kidney. As the late Dr. James A. Gardner of Buffalo has said, "We have learned that the balance between the various elements of the system is so adjusted that a disturbance of one of them will bring to light weakness in some of the others which has not been suspected. . . ."

The experience of many years and of many urologists has shown the value of preoperative study and adequate care, and there is no question that it is now carried out by all who attempt any sort of a prostatectomy. But it is a question whether if it were carried out in certain patients for an even longer period of time than is usually the case, it would not still further reduce a too high mortality.

With this question in mind I have been interested in going over the records of a group of twenty-one patients with obstructing prostates who were unusually bad risks from beginning to end. Some were almost, but not quite moribund when seen, this being due quite as often to long-continued retention of urine and to "that symptom-complex which we somewhat loosely called uremia" (H. Cabot) as to anything else. Yet all of these patients had their prostates removed after a period of preoperative study and preparation ranging from two to eleven months (an average of over five months) with but two deaths, giving a mortality of 9.5 per cent. One patient died of bronchopneumonia, the other of urinary sepsis. I realize that this is but a mere handful of cases, but none the less it shows what can be done even with very unpromising material. Although many of these patients were under my own personal care and all were under my immediate supervision, it is difficult to say more than approximately what the outstanding handicap was. For purposes of discussion I have divided them as follows: Nine cardiac, seven renal, and five with a variety of lesions including cancer of the rectum with cachexia, secondary septicemia, and advanced arteriosclerosis. It is unquestionably true that the cardiac and renal groups could be more or less completely merged, and it is equally true that arteriosclerosis was definitely in the back-

*From the Urological Department, Massachusetts General Hospital.

Read at a meeting of the New England Surgical Society, Burlington, Vermont, September 28, 1934.

†Barney, J. Dellinger—Chief of Service, Urological Department, Massachusetts General Hospital. Kelley, Sylvester B.—Assistant Urologist, Massachusetts General Hospital. For records and addresses of authors see "This Week's Issue," page 1168.

ground of all. In only one of the group was cancer of the prostate found, but this patient recovered well and left the hospital after a smooth convalescence. The average age of this group was something over sixty-six years, the oldest being eighty-one, the youngest fifty-one. Urinary difficulties of one sort or another, mostly retention, existed to the patients' knowledge anywhere from a few days to twelve or fifteen years.

Preoperative care was conspicuous not because anything was done or administered that was unusual, but only because of its long continuance. This I believe is the secret of the success attained. Those who had acute retention with an overdistended bladder were gradually decompressed, this being followed shortly, or after a certain amount of catheter drainage, by suprapubic cystotomy. Where decompression was not needed, cystotomy was generally performed shortly after the patient was seen. A cardiac consultant examined each case and where indicated the patient was completely digitalized. Roentgenograms of the heart and lungs and of the urinary tract were part of the routine in all cases. Intravenous pyelograms were also done, unless contraindicated by a high N.P.N. or pyrexia. These measures are of immense importance and value from a therapeutic as well as from a prognostic viewpoint. Tests of blood chemistry were done repeatedly as well as phthalein estimations. Complete blood studies together with blood Wassermann or Hinton tests were also done. In most instances dehydration was overcome not so much by forcing fluids by mouth as by the use of intravenous glucose solution.

I wish to emphasize the tremendous value of this therapeutic measure, for I do not believe it is always used to its fullest extent. A five per cent solution, with the buffer omitted, can be given in amounts of 1000 to 1500 cc. once or even twice daily for many days and even weeks, as long in fact as there are available veins to use. It is painless, and except for an occasional febrile reaction, harmless. Meantime the patient drinks what liquids he comfortably can, all the while reviving like a wilted flower. Even ten per cent glucose can be used in patients whose urinary output and function remains at a low ebb. In the presence of diabetes, glucose solution should be administered only under the supervision of one thoroughly familiar with this disease.

Regardless of what the laboratory reports indicated as to the patient's status, he was not operated upon until he had returned to an essentially normal clinical condition. This involved normal sleep, normal appetite and digestion, regular bowel movements, and a return of strength and that sense of well-being which characterizes good health. All patients were kept outdoors as much as possible, and all were gotten out of bed and into a chair or onto their feet as soon as they were able. When it was obvious not only that the patient would have to delay his final operation for a considerable time but also that he was strong enough to leave the hospital, he was sent either to his home or to some other institution. The economic factor in these patients carries considerable weight. From this time he was followed either through his visits to the hospital or through a local doctor. When it seemed justifiable to do so he was readmitted and again carefully studied from the point of view of an operative risk. Several came back to us two or three times only to be postponed still further. I should say at this point that this group of especially poor risks does not include a good many others who because of their even worse condition were never able to get beyond the first stage of the operation and who continued with suprapubic drainage the rest of their lives.

The course of practically all of these cases from the time when they were admitted was decidedly difficult and stormy. What with delirium, uremia, decompensation, sepsis of greater or less degree, angina and other ills they have furnished work, anxiety and excitement for all concerned. In many the improvement was so slow as to be almost imperceptible. On the other hand the fact that it did occur was in itself a reward for the care involved.

The first stage of the operation, suprapubic cystotomy, which has a definite mortality of its own, was done, as I have said, as soon as possible after the patient was admitted. This was performed in practically all cases under local novocain anesthesia and was preceded, or done together, with a bilateral vasectomy almost as a routine. I believe very strongly that vasectomy should be done in all cases of obstructing prostate regardless of the type of the final operation. It is especially important in the old and feeble patient. The onset of an acute epididymitis or of a scrotal abscess, whether or not it must be drained, prolongs the patient's invalidism and may well be the proverbial "last straw" which prevents recovery. I cannot feel that vasectomy adds anything to the patient's operative load. Bladder drainage has been carried out preferably with a large, open-end mushroom catheter (32 to 36 French Scale). These catheters drain efficiently over an almost indefinite period and eventually fit so snugly into the sinus that they do not leak and need only a gauze sponge or two, changed daily, around them. By day the catheter is led through a piece of tubing into a rubber receptacle attached to the calf of the leg. By night it runs by a long tube into a bottle by the patient's bed. The tube should be irrigated daily with boric solution and with two per cent phosphoric

acid solution if incrustation occurs. If and when the lumen of the tube becomes too thickly encrusted, it should be removed and cleaned. Meantime the patient should force fluids all he can and take methenamin and acid sodium phosphate in ten grain doses thrice daily. The latter may be replaced by fifteen grains of ammonium nitrate if the urine does not stay acid. It is surprising how comfortable these old men can be kept with a permanent suprapubic drain. Some of this group continued with it for as long as ten or eleven months; others have continued it for several years. Meantime, so far as the drainage tube was concerned, they have been able to get around comfortably and normally, and many have gone back to a job which involved manual labor.

The prostate was finally removed in nineteen by the suprapubic route, in one by perineal operation, and in one transurethral resection was done. This procedure was also carried out in another patient previous to his suprapubic prostatectomy. Spinal anesthesia was used in twelve cases, but in two it failed so that ether was also administered. In four patients gas-ether was the anesthesia of choice. In the remaining five the records do not state what anesthetic was used. While I am a strong advocate of spinal anesthesia and use it whenever possible, I believe that many of these poor risks do better with ether. This applies particularly to those whose circulatory pathology is more prominent than their renal damage. I feel very definitely that success or failure will often depend upon the wise choice of the anesthetic.

It has been interesting to watch the convalescence from their final operation of these frail old patients, and to compare it with that after the first stage was performed. In only three of the nineteen who survived could the recovery be called "stormy". The others convalesced with remarkable speed, the average time being often less than that required by the so-called good risks.

From this experience I have been long convinced that prostatectomy can be made even safer than it now is by the simple expedient of not being in a hurry. We know a good deal about the clinical and laboratory aspects of the patient with prostatic obstruction and I do not doubt there is more still which we should know. But I do not think that the policy of "watchful waiting" over what seems to be an unnecessarily long time has been widely enough adopted. Nor is it hard to understand this. What with the patient and his family exhorting us on the one hand, and the hospital asking for a rapid turnover on the other, it is sometimes easy to be persuaded against one's better judgment. We should resist all these inducements and I believe should apply the principle not only to the class of bad risks just described, but even to the supposedly good risks as well. For is it not true that there is a higher mortality than we would like among these also?

In closing these remarks I would stress certain points. First, the mortality of apparently hopeless cases of prostatic obstruction can be kept to an exceedingly low point by careful study, prolonged drainage and a two-stage operation. In the final estimate as to the condition of the patient, one's clinical judgment is quite as valuable as the laboratory findings. The patient who, at first, seems to be an almost hopeless prospect may go through most successfully. Secondly, suprapubic drainage when properly executed and with a suitable tube, preferably an open-end mushroom catheter, can be comfortable and free from the discomforts to which it supposedly gives rise. Finally bilateral vasectomy is a most important procedure in the prevention of needless and sometimes fatal sepsis in the old and feeble patient.

DISCUSSION

Dr. Winford O. Wilder, Springfield, Mass.: *Mr. President and Gentlemen* — The importance of an extensive period of draining of the bladder as a feature of the pre-operative preparation for practically all cases of prostatectomy has, during the last thirty years, become universally accepted by surgeons interested in the relief of obstructive lesions of the bladder.

We read that as early as 1899 Dr. Arthur Cabot published a paper in which he stated that it was often surprising to see how quickly the character of urine changed for the better under catheter drainage of the bladder, and in 1905 and 1906 Lilienthal and Chetwood separately reported short series of prostatectomies in which preliminary cystotomy had been utilized for drainage.

Everyone recalls the frightful mortality which characterized the early one-stage prostatectomies which were preceded by no preliminary drainage, and has thrilled at the comparative results which have been accomplished in prostatic surgery during recent years by the universal recognition of the importance of preliminary bladder drainage by urethra, or suprapubically.

During all these years an endless number of papers have been written on the subject of preliminary drainage of the bladder, and this preaching of the gospel has been so widespread and thorough that as a result no other surgical procedure has witnessed a more marked fall in its mortality rate than has prostatectomy in the last thirty years, regardless of the particular type of operation selected.

Dr. Barney, in his most excellent paper, has again not only stressed the great importance of preliminary drainage in prostatectomy cases in general, but also has, with this most interesting series of his, clearly shown the added value of really prolonged preliminary drainage in that class of prostates characterized by extreme feebleness as a result of long-continued vesical obstruction, severe urinary infection, cardiac impairment, or the general stress of advanced years. His suggestion that possibly we do not drain this type of case for a sufficient length of time is well taken, I think.

Well do I remember such a case during my early training in urology, a feeble old man with markedly impaired renal function, associated with definite foul urinary infection, and a badly weakened myo-

cardium. This man was drained for nine months with a retention catheter, and eventually survived a perineal prostatectomy with no gross mishap.

With this example always in my mind, it has been my custom when treating such a type of case, to proceed with extreme procrastination after drainage either by catheter or cystostomy has once been established. I have frequently indulged in the habit of even utilizing an indwelling catheter several days preliminary to a cystostomy, in an effort to improve, if possible, the patient's general feeble condition sufficiently to weather such an operation.

Once one of this feeble type of cases has survived the first stage, it is often good judgment, I think, to allow such a case to return home for a prolonged period of drainage before attempting the more exacting, final stage of prostatectomy. The more congenial environment in all details, combined with the extended period of drainage, will often accomplish the unbelievable.

Provided a trained urological nurse or an assistant is available for frequent changes of catheter, prolonged retention catheter drainage at home is equally if not more certain in its beneficial results.

Dr. Barney's counsel that a longer drainage period in the good risks will reduce even the now existing low mortality rate in that class, is also well taken, I think, with possibly one exception, and here I refer to that type of case presenting vesical obstruction but accompanied by no marked impairment of renal function, only slight (if any) infection, and no cardiac weakness.

Well do I remember seeing a man of eighty-six, several years ago, whose bladder was so solidly filled with blood clots as to render a satisfactory cystoscopic examination impossible. Immediate suprapubic cystostomy under a quarter grain of morphia, and local anesthesia, with an attempt to control bleeding from the prostate with gauze, proved a complete failure; however, a rapid and complete enucleation of the prostate was followed by a most uneventful recovery.

This case represents in my mind a class of vesical obstruction which, fortunately, is associated with no marked renal impairment or infection, and requires no preliminary drainage either intra-urethrally or suprapubically before removal of the vesical neck obstruction.

The majority of this type of cases, I am inclined to believe, may be relieved of their obstructive lesion by transurethral resection.

Extended retention catheter drainage in these cases is bound to cause an exacerbation of a frequently preëxisting chronic infection in the prostate and serves no good purpose.

Preliminary vesical drainage should be reserved for these cases of obstruction characterized by definite renal impairment and infection; and for that type of case described by Dr. Barney as frail and feeble, prolonged vesical drainage is without doubt to be most patiently indulged in, and, as Dr. Barney has demonstrated in his case reports, should be followed by many unexpected, and happy results.

I am sure we are all greatly indebted to Dr. Barney for the practical manner in which his subject has been presented and for the truth expounded so clearly.

Dr. George G. Smith, Boston, Mass.: *Gentlemen*—There are three points in connection with Dr. Barney's very interesting paper that I should like to speak about. The first is in connection with the diminution of renal function which we see in these cases that require very long drainage. The experience which I have had with these cases has taught me, through two or three rather bitter experiences, that if, after a number of months of drainage the non-protein nitrogen does not come down to normal or below 40 at least, it is extremely unsafe to attempt to do anything further to these cases.

The phthalein test does not seem to me to be as important. I wouldn't hesitate to operate on a case with a low phthalein test, provided the non-protein nitrogen is of good figure, but in two cases I have in mind, although I felt that from this general condition they would be safe operative risks, their non-protein nitrogen was fifty or above, and they died. Unfortunately, we were unable to get an autopsy in one case, but I felt sure that his continued high non-protein nitrogen meant he did not have sufficient kidney reserve to stand any sort of operative interference.

In the other group of cases, the cardiac group, I think it is very interesting to see how some of these patients whose hearts are in extremely bad condition, when they have their suprapubic cystostomies, will pick up in cardiac function after a number of months or even weeks of this treatment. This simply means, I think, that the action of the heart muscle is materially affected by the constant toxemia which comes from a distended bladder.

In regard to the anesthesia that should be used in these cardiac cases, I am afraid that my experience does not agree with Dr. Barney's. I have felt that spinal anesthesia is not the anesthetic of choice in these cases, and I think the general feeling among men who have used a good deal of spinal anesthesia is tending to that same end.

The cardiac cases that we see are usually those with coronary sclerosis. If, during spinal anesthesia, blood pressure falls, the circulation within the heart muscle is immediately very much reduced, and this may initiate a cardiac collapse which is only too often fatal. I feel that light, quick ether is really the safest anesthetic.

I understand that at the Brady Urological Institute, in Baltimore, they have been using extremely low doses of novocain, 40 or 50 milligrams, and have been getting adequate spinal anesthesia for perineal prostatectomy, and, if it is true that one can obtain satisfactory anesthesia with this low dose, I think it is a very valuable point to bear in mind, because the danger of lowering the blood pressure with as small a dose as that is extremely slight. Unless that is so, I should continue to feel that a light, carefully given ether is probably the best anesthetic for the cardiacs.

Dr. J. Dellinger Barney, Boston, Mass.: I really agree with what Dr. Smith has said. I believe it myself. I didn't elaborate it enough. I think these old fellows are better off with ether. It is quick and snappy, a good anesthetic, but I also believe we can do a lot, and get away with it, if we use smaller doses of novocain for spinal anesthesia. For spinal I often use 50 milligrams for suprapubic prostatectomy, and it works as well as 100 milligrams. But for the old man with circulatory disturbance, I think ether is safer and I feel more strongly about it than you were led to suppose by my paper.

RETINITIS IN DIABETES

BY HENRY P. WAGENER, M.D.,* THOMAS J. STORY DRY, M.B.,* AND RUSSELL M. WILDER, M.D.*

THE material chosen for this study consists of the records of 1052 cases of diabetes. Examination of the eye grounds was made in all cases, and usually by one examiner (Wagener) whose interest and experience in the retinitis of diabetes extends back to the 1921 report on the subject written by two of us[3]. The records in question were accumulated over the period of three years from October 1, 1928 to October 1, 1931. They comprise the "run-of-the-mill" type of case on the diabetic service, that is, all patients who were examined, omitting only returning patients who had previously been counted and 194 patients who for one reason or another were not examined by the ophthalmologist.

In some cases in which patients suffer from both diabetes and severe hypertension, retinitis may be seen that is dependent entirely on the hypertensive disease. Constriction and sclerosis of the arterioles are present, with cotton-wool patches and superficial areas of hemorrhage, with or without diffuse edema of the retina. Such a picture is in no way suggestive of diabetes (fig. 1).

FIG. 1. Retinitis of severe hypertension (angiospastic). Constriction of the arteries is an outstanding feature. The hemorrhages are superficial and flame-shaped. Cotton-wool patches are present.

In the large majority of cases of diabetes, however, whether hypertension is present or not, lesions of the retina, if present, are characteristic of diabetes and are not seen in similar form or distribution in any other disease. These lesions may occur in various combinations. We have described them under distinct types, but the types in our opinion represent progressive phases in the development of a common underlying process. They are (1) hemorrhages alone, with no other lesion, (2) hemorrhages with punctate exudates, (3) hemorrhages with both punctate and cotton-wool-like exudates, (4) hemorrhages or exudates associated with visible lesions in the veins, and (5) visible lesions in the veins with recurrent hemorrhages into the vitreous and proliferation of new vessels and formation of scar tissue.

The earliest and mildest type of retinitis in diabetes consists of tiny punctate hemorrhages which are situated usually in the vicinity of dilated terminal venules in the macular region. In later phases of the disease these hemorrhages may be larger and more widely spread. Almost always, however, they are deeply situated and therefore more or less round in form (fig. 2).

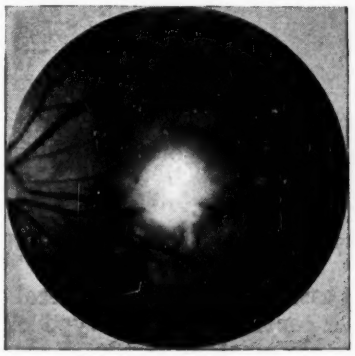

FIG. 2. Diabetic type of hemorrhage in the retina. Two large hemorrhages are clearly seen. Smaller, deeper ones are present but less obvious. All of these hemorrhages are essentially round in form.

At a later but still early stage a few, shiny, irregularly-shaped punctate exudates are seen apparently lying in the deeper layers of the retina, either above or below the fovea centralis and usually in association with the minute hemorrhages just described. This picture has been called "central punctate retinitis," a term introduced by Hirschberg (fig. 3). Similar exudates or areas of degeneration may later appear in any part of the retina, may assume a tendency to coalesce, and, in long-standing cases,

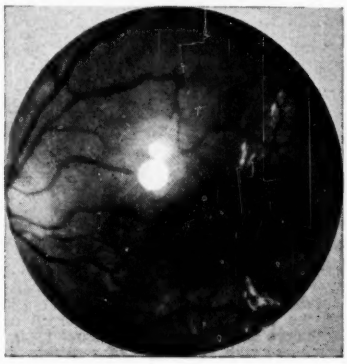

FIG. 3. Central punctate diabetic retinitis (early stage). The deep retinal exudates above and below the macula are clearly seen. The small punctate hemorrhages are less obvious.

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may ultimately fuse in the macular region into large and necrotic looking plaques that seriously interfere with central vision. In the more advanced stages the hemorrhages are very widespread, and many of them are large and of irregular form (fig. 4).

FIG. 4. Central punctate diabetic retinitis (late stage). The dense plaque-like exudates in the macular region are striking. The good condition of the retinal arteries may be noted.

In some cases in which the general picture is that of the central punctate type of retinitis, larger, more edematous exudates may be scattered throughout the retina. At times these are identical in appearance with the "cotton-wool" patches of hypertensive retinitis and, like them, lie in the nerve fiber layer of the retina; they probably are dependent on a complicating hypertension with angiospasm. In other cases, these patches of exudate are more deeply situated, more yellowish in color, and more chronic in appearance than the typical cotton-wool patch. The significance of this cotton-wool-like

FIG. 5. Central punctate diabetic retinitis with cotton-wool patches. That the arteries are not strikingly constricted and that the hemorrhages are of the deep round type will be noted. These features distinguish this type of retinitis from that seen in figure 1. In this type of case hypertension usually is not severe.

patch is not clear, although we have assumed that its presence indicates vascular injury of greater severity than is present in the typical, central punctate variety of diabetic retinitis. In the present grouping of cases we have referred to retinitis with either type of cotton-wool exudate as hemorrhage with punctate and cotton-wool-like exudates (fig. 5).

In these varieties of retinal lesion (the punctate hemorrhagic lesion, the lesion consisting of hemorrhages with punctate exudates, and the lesion consisting of hemorrhages with punctate and cotton-wool-like exudates) visible changes in the arterial vessels of the retina are not prominent. The arteries are normal or show at most a moderate degree of sclerosis. Angiospasm is absent except in some of the cases in which there are cotton-wool patches. The retinal veins, however, are frequently mildly dilated.

In a certain number of cases of diabetes marked abnormality is observed in the veins, different apparently from that seen in any other disease although resembling somewhat the lesion produced by tuberculosis. The veins are more or less uniformly dilated and appear cyanotic. In some, nodular dilatations with intervening constrictions are observed, suggesting the presence of mural thrombi. Sections of the wall of the vein may be ensheathed in a layer of heavy, grayish-yellow infiltration, and other sections of the vein appear to be obliterated. These venous lesions are usually associated with large and extensive areas of hemorrhage. The condition described may be implanted on a retinitis typical of the central punctate type, with or without cotton-wool-like patches, although it may represent a primary lesion (fig. 6). Hemorrhages into the

FIG. 6. Retinitis with marked disease of the veins. The dense infiltration along the peripheral portion of the inferior temporal vein, the necrotic looking area in the macular region, and the extensive deep hemorrhage above may be noted. This is the type of lesion that may ultimately lead to retinitis proliferans.

vitreous occur rather commonly in association with this marked disease of the veins, and as a result of or as a sequel to these hemorrhages, bands of scar tissue may form and newly-formed vessels proliferate into the vitreous, giving rise to a picture of "retinitis proliferans" similar to that described in tuberculosis and syphilis. Contraction of the bands of scar tissue may result in detachments of the retina (fig. 7). This is the most serious and rapidly progressive of the types of retinitis associated with diabetes mellitus. It seriously interferes with vision. When encountered in its final stages, it always arouses a sus-

picion of retinal tuberculosis; however, since all transitional stages can be observed from a typical retinitis of diabetes, through the appearance of mild lesions of the veins, to the terminal picture of the retinitis proliferans of patients who give no clinical evidence of tuberculosis or syphilis, it would seem that the severe lesion in question is primarily of diabetic origin.

The relative frequency with which lesions of these various types occurred, as observed in this series of 1052 diabetic patients, is given in table 1. It will be noted that the incidence of hemorrhagic lesions of all varieties was 17.7 per cent, that the lesion was limited to hemorrhages in 5.5 per cent of cases, leaving 12.2 per cent in which there were lesions with exudates. These figures are in striking agreement with those presented by Waite and his associates from the Deaconess Hospital in Boston.

The following correlations are of interest. The distribution of diabetic retinitis by sex is about equal. The distribution by age is instructive. Patients less than forty years of age numbered only eight, or 4.3 per cent,

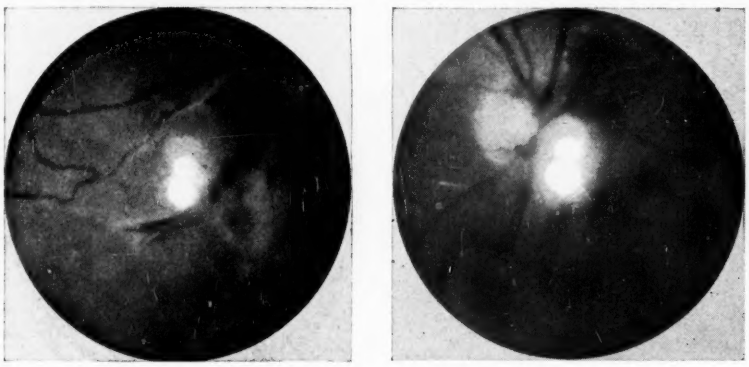

FIG. 7. Retinitis proliferans. The proliferated new vessels on the nasal margin of the disk and infiltration and proliferation of scar tissue along the peripheral vein may be noted. In this case the lesion probably was tuberculous. In diabetic retinitis proliferans, the lesion is essentially the same; the veins are likely to be more diffusely involved and hemorrhages and exudations of the diabetic type are likely to be present, particularly in the macular region if this area of the retina is visible through the large hemorrhagic extravasations in the vitreous.

TABLE 1

INCIDENCE OF RETINITIS IN 1052 CASES OF DIABETES

Type	Males	Females	Total	Incidence per Cent
Lesion typical of hypertension	4	8	12	1.1
1. Hemorrhages only	32	26	58	5.5
2. Hemorrhages with punctate exudates	32	35	67	6.3
3. Hemorrhages with punctate and cotton-wool-like exudates	15	16	31	2.9
4. a. Venous disease without proliferation	5	6	11	1.1
b. Venous disease with proliferation	3	5	8	0.8
Total	91	96	187	17.7

Types 3 and 4 represent the "retinitis centralis punctata diabetica" of Hirschberg.
Type 4 b is the full-blown retinitis proliferans.

which is significantly at variance with the figures for "run-of-the-mill" patients. The number of patients less than forty years of age in all cases of diabetes in the years in question was 187, or 15 per cent of the total.

The correlation with blood pressure is also significant (table 2). Patients with retinal lesions who had blood pressure greater than 140 systolic and 90 diastolic represented 66.8 per cent of the series, whereas in a control series of patients with no retinal lesions the incidence of blood pressure greater than this was only 46 per cent. Similarly for other evidence of arterial disease: arterial or renal disease was diagnosed in 84.5 per cent of the cases in which patients had retinal lesions and in only 53.3 per cent of the control series.

The frequency with which disease (neuritis diabetica?) of the peripheral nerves occurs coincidentally with retinal lesions is also striking. In the series of patients with retinitis 25 per cent suffered from some involvement of the peripheral nerves; in the control series only 8 per cent were affected with disturbances of the peripheral nerves (table 2).

In twenty-nine of the 187 cases of diabetes

in which hemorrhagic lesions of the retina were present the blood pressure was less than 140 systolic and 90 diastolic, and no clear evidence existed of any disease of the arteries or kidneys that might be incriminated for the abnormalities observed in the retina. Arteriosclerosis was suspected in six of these cases solely because of constriction observed in the retinal arteries. If these six patients are excluded, twenty-three who had retinal lesions remain, in whom there is nothing to incriminate other than diabetes. The number is not large but the importance of this group of patients is such as to warrant special attention (table 3). These twenty-three patients ranged in age from twenty-five to fifty-nine years. Seven of them were less than forty. Diabetes ranged in severity from very mild, grade 1, to very severe, grade 4. Retinitis usually was mild. In seventeen cases it was limited to punctate hemorrhages alone but in six cases exudates also appeared and, in these the hemorrhages were of the round punctate type giving the typical picture of a central punctate retinitis. There seems to be no correlation between the severity of the disease and the intensity of the retinitis in question; there does seem to be some relationship, however, between the duration of the disease and the degree of development of the retinal lesions. Several of these patients were reëxamined in the period before or after this review, and in a number of instances a progressive increase in the intensity of the lesion has been observed.

TABLE 2

BLOOD PRESSURE, DISEASE OF ARTERIES OR KIDNEYS, INVOLVEMENT OF PERIPHERAL NERVES

Series	Blood Pressure Greater than 140 Systolic and 90 Diastolic		Diagnosis Made of Disease of Arteries or Kidneys		Evidence of Abnormality of Peripheral Nerves	
	Cases	Per Cent	Cases	Per Cent	Cases	Per Cent
187 cases of diabetes with hemorrhagic lesions of the retina	125	66.8	158	84.5	47	25
Control series of 371 consecutive cases of diabetes	171	46.0	198	53.3	30	8

Progression of retinal lesions was also observed in other cases of the series as a whole. There were sixty-six patients whose eyes were examined two or more times over successive years. In twenty-three cases the retina was normal when first seen but later revealed lesions ranging in severity from hemorrhages only, in twelve cases, to retinitis proliferans, in one case. In nine cases the diagnosis was "hemorrhage only" at the first examination; in seven of these a later examination revealed exudates and in two venous disease. In four cases in which the lesion was called "hemorrhages with punctate exudates" venous disease was present subsequently in two cases and retinitis proliferans in two. In one case in which punctate and cotton-wool-like exudates were found at the first examination venous disease was found later. On the other hand, in twenty-five cases there was no evidence of progression of a retinal lesion previously observed, and in four cases, in three of which there was hemorrhage only and in one hemorrhages and exudates, retrogression occurred, so that at a later examination the retina was considered normal in appearance.

We have been able to find nothing to account for progression or retrogression of these retinal lesions. There seems to be no correlation either with the severity of the diabetes or the effectiveness of management. Progression was observed in cases of mild diabetes and in cases in which control of glycosuria was good, and, vice versa, in cases of more severe degrees of diabetes and others in which management was poor the lesion has not exhibited progression. The longest known duration of retinitis in the cases of this series is thirteen years. The patient was a man, aged forty-five years in 1929, who had had diabetes sixteen years. He was treated by Banting in 1922, and used insulin after that time. The retinitis in 1929 was of the mixed vascular type, punctate hemorrhages and exudates combined with sclerosis of the arteries.

COMMENT

In the report on this subject made in 1921 we arrived at the conclusion that diabetic patients with retinitis of the diabetic type were almost always affected by vascular or renal disease, and that the diabetes tended to be mild and chronic. This was true in all of the cases of this kind found in a study of a rather small series of diabetic patients (300). The primary cause of the retinitis of diabetes seemed to lie in the accompanying pathologic changes in the vascular system, the more essentially metabolic disturbances of the disease playing at most a secondary part.

As a result of the present study it becomes

TABLE 3

DATA ON TWENTY-THREE DIABETIC PATIENTS WITH RETINAL LESIONS BUT WITHOUT DEMONSTRABLE ARTERIAL OR ARTERIOLAR DISEASE

Age, Years, and Sex*	Diabetes: Duration, Years†	Diabetes: Grade‡	Blood Pressure: Systolic	Blood Pressure: Diastolic	Reports of Ophthalmologist: Year of Examination	Reports of Ophthalmologist	Comments
25 F	5	3	110	80	1923	Fundus negative.	Fair control maintained throughout.
					1927	Mild retinitis of central punctate type. Groups of small punctate hemorrhages in both maculae and scattered hemorrhages in the left eye. Arteries normal.	
28 M	6	3	112	68	1925	Fundus negative.	Diabetes of acute onset. Control not completely satisfactory.
					1927	Rather tortuous arteries. One questionable small punctate retinal hemorrhage in right eye.	
30 M	1.5	3	110	78	1929	Petechial hemorrhages in right eye and small flame-shaped one in left eye, but no exudates.	Diabetes of acute onset after influenza. Fair control. Pains in lower extremities. Tendon reflexes absent.
30 M	1.5	4	120	88	1929	Some anemia of the disks. Rather dilated retinal vessels. Moderate retinitis, hemorrhages and deep cotton-wool exudates possibly associated with anemia.	No treatment. Diarrhea for eight months. Achlorhydria. Hemoglobin: 13.1 Gm. per cent.
36	7	3	102	72	1924	Fundus negative.	Diabetes began during pregnancy. Acidosis in 1924. Insulin treatment instituted, and continued thereafter with satisfactory control.
F					1928	Arteries normal; veins full. One hemorrhage in the left retina.	
36	5.5	4	130	90	1924	Fundus negative.	Diabetes at first mild, controlled without insulin. Pregnancy occurred with abortion at five months. In 1925, a tooth extracted; acidosis followed. Treatment with insulin instituted, and continued thereafter with good control.
F			126	80	1925	Fundus negative.	
					1928	Arteries normal. A few petechial hemorrhages in retina.	
42	11	2	130	76	1916	Fundus negative.	Glycosuria discovered in 1916. Controlled with qualitatively restricted diet. Insulin given. Despite irregular dietary management, tolerance increased and in 1927 insulin could be omitted.
F					1924	No visible arterial changes. Veins rather full. Group of early type of diabetic retinal exudates nasal to right disk, with a questionable, small punctate hemorrhage.	
					1927	Mild retinitis of central punctate diabetic type.	
43 F	3	3	124	84	1930	Negative except for one small hemorrhage in the left retina.	Diabetes with insidious onset. No treatment. Much diabetes on both sides of family.
43 M	5	3	124	70	1929	Very early central punctate diabetic retinitis.	Incomplete control with diet. No insulin used.
43 M	10 to 12	1 to 2	135	90	1929	Veins full; arteries of small caliber. Few punctate hemorrhages above right macula at a terminal venule.	Hemoglobin 65 per cent. Erythrocytes 4,510,000. Leukocytes 6,800, with lymphocytes 46 per cent to 55 per cent. Possibility of early leukemia; also, arterial disease not excluded.

*Age is that at the last examination made between October 1, 1928 and October 1, 1931.

†Duration is calculated to the last examination made between October 1, 1928 and October 1, 1931.

‡The grade of diabetes is determined as follows: Grade 1, a very mild case, glycosuria controlled by omitting sweets from the diet; grade 2, a mild case, requiring a measured diet with glucose equivalent not exceeding 140 Gm.; grade 3, a moderately severe case, requiring a measured diet and from 5 to 30 units insulin daily; grade 4, a severe case, requiring over 30 units of insulin daily. Thus the grade indicates the insulin requirement.

§Since the completion of this table, this patient has been reëxamined. He now has central punctate type of retinitis with marked venous disease and large hemorrhages in the retina and in the vitreous with commencing retinitis proliferans.

TABLE 3 (*Concluded*)

Age, Years, and Sex*	Diabetes: Duration, Years†	Diabetes: Grade‡	Blood Pressure: Systolic	Blood Pressure: Diastolic	Year of Examination	Reports of Ophthalmologist	Comments
46 M	7	4	110	76	1928	Mild retinitis, not the typical diabetic type.	Incomplete control. Insulin used only intermittently until 1928. Thereafter, control satisfactory. Diabetic neuritis diagnosed.
					1931	Moderate retinitis of central punctate diabetic type. Retinal arteries normal.	
47 M	1	2	126	78	1930	A few punctate hemorrhages in right macula.	Sugar found on examination for life insurance. Minute doses of insulin used later. Control satisfactory.
47 M	0.5	4	85	50	1928	Hemorrhage in left retina. Retinal arteries normal.	No treatment. Diabetic neuritis diagnosed.
49 F	?	2	130	62	1929	Central punctate diabetic retinitis with incomplete macular star on the right.	Glycosuria discovered at this examination.
50 F	9	3	130	80		Diabetic retinitis in both eyes.	Control with diet alone until after pregnancy and miscarriage; then, insulin intermittently. Family history of diabetes.
51 F	1—	2	135	70	1926	Fundus negative.	Glycosuria discovered at examination in 1930. Insulin not required. Subsequent control satisfactory.
					1930	No examination of fundus.	
					1934	Small patch of discrete, deep exudates temporal to left macula. Tortuosity and slight variation in caliber of retinal vessels.	
52 M	2	2	120	78	1928	Few, fine punctate retinal hemorrhages.	Incomplete control. No insulin.
52 F	12	3	120	70	1930	Retinal arteries mildly reduced in caliber. Early central punctate diabetic retinitis.	Incomplete control. No insuiin.
52 M	8	3	136	88	1929	Central punctate diabetic retinitis of rather long standing. Larger exudates left macula.	Acute onset. Fairly satisfactory control. Diabetic neuritis diagnosed.
52 F	7	4	140	76	1929	Punctate hemorrhages in maculae and a few scattered ones. Veins full.	Poor control. Insulin used, but glycosuria present much of the time.
57 F	8	4	138	85	1928	One small hemorrhage above and nasally to left macula; otherwise, essentially negative.	Incomplete control. Insulin given for three years and then discontinued. Chronic cholecystitis.
59§ M	1.5	3 to 4	108	80		Retinal hemorrhages in right eye.	No treatment. Hemoglobin 65 per cent. Erythrocytes 3,870,000. Anemia a possible factor.
59 M	1	1 to 2	98	64	1927	One small hemorrhage in the right eye.	Satisfactory control without insulin. Adenomatous goiter without hyperthyroidism. B. M. R. +4.

*Age is that at the last examination made between October 1, 1928 and October 1, 1931.

†Duration is calculated to the last examination made between October 1, 1928 and October 1, 1931.

‡The grade of diabetes is determined as follows: Grade 1, a very mild case, glycosuria controlled by omitting sweets from the diet; grade 2, a mild case, requiring a measured diet with glucose equivalent not exceeding 140 Gm.; grade 3, a moderately severe case, requiring a measured diet and from 5 to 30 units insulin daily; grade 4, a severe case, requiring over 30 units of insulin daily. Thus the grade indicates the insulin requirement.

§Since the completion of this table, this patient has been reëxamined. He now has central punctate type of retinitis with marked venous disease and large hemorrhages in the retina and in the vitreous with commencing retinitis proliferans.

obvious that this earlier conclusion must be modified. In the first place the incidence of retinitis is 17.7 per cent in this study as compared with 12.3 per cent in 1921. The increase is undoubtedly accounted for by the longer lives at present of diabetic patients. The longer the life the greater the opportunity for retinitis to develop, whatever its cause. In the second place, this later study reveals cases in which retinitis develops in the absence of all clinical evidence of other vascular disease. Such cases are infrequent; the incidence is about 12 per cent of all diabetic patients who have hemorrhagic lesions of the retina. The lesion, under these circumstances, is usually mild; there is no correlation between it and the severity of the diabetic process or the degree of the effectiveness of the control of glycosuria. Yet the very existence of retinitis in cases in which patients have no other signs of vascular disease must mean that diabetes alone does something to injure the finer arterioles or venules of the retina, probably the latter. The retinal disease in question seems to pass progressively through successive stages, beginning with hemorrhages only and eventuating in very evident disease of the veins. The final stage is manifested by hemorrhage into the vitreous and the fully-developed picture of retinitis proliferans.

Injury to the retinal vessels may occur in all cases of diabetes. If so, it is insufficient in degree in most cases to bring about visible abnormalities in the vessels or to give rise to actual hemorrhages or exudates. In a few cases it does do so, and when the circulation of the retina is adversely influenced by the presence of arterial or arteriolar sclerosis, it is more likely to be manifest. In that case a lesion characteristic of diabetes (punctate hemorrhages and deep exudates, and often visible disease of the larger veins) is added to a retinal vascular lesion otherwise characteristic of hypertension; this gives a composite picture from which the trained observer can diagnose diabetes.

By what means diabetes injures the retinal vessels in this characteristic manner, whether because of its accompanying hyperglycemia or hypercholesterinemia, or because of the presence intermittently of the products of ketosis, we cannot say. The lesions are observed in cases of mild diabetes as frequently as in cases of severe diabetes, in those in which insulin is used as well as in those in which diabetes is controlled without insulin, early in the disease as well as late, although more frequently late, and when the carbohydrate of the diet has been unlimited as well as when it has been restricted and more fat has been fed.

The possibility occurs to us that lesions like those observed in the retina may also occur in the peripheral nerves and thus account for the high incidence of peripheral neuritis among patients with retinitis. Also, similar lesions affecting the vasa vasorum of the larger arteries might contribute to the atherosclerosis of the larger arteries, which occurs so frequently among diabetic patients at an age earlier than is common among persons who are not diabetic.

SUMMARY AND CONCLUSIONS

Ophthalmoscopic examination in 1052 cases in which patients had diabetes revealed hemorrhagic lesions of the retina in 187, or 17.7 per cent. Hemorrhage alone was observed in 5.5 per cent; hemorrhage associated with exudates, 12.2 per cent.

The retinal lesions in question occur predominantly among patients more than forty years of age. The lesions are usually but not always associated with hypertension or other evidence of general vascular disease.

The frequency of coincidence of disease of the peripheral nerves and diabetic retinitis is high; the former occurring in 25 per cent of all cases in which retinitis was present.

In sixty-six of the 187 cases in which patients had hemorrhagic lesions of the retina, the eye grounds were examined two or more times over successive years. Progression of the retinal disease was noted in thirty-seven of these cases, no change occurred in twenty-five, and there was retrogression in four.

The retinal disease in question seems to pass progressively through successive stages, beginning with hemorrhages only and eventuating in a gross venous disease with hemorrhages into the vitreous and proliferation of connective tissue.

It is our belief that diabetes injures the finer arterioles or venules of the retina, probably the latter; that the injury is insufficient in degree in most cases to bring about abnormalities that are visible with the ophthalmoscope; but that when a visible abnormality is produced, it is characteristic. When the patient is afflicted with other diseases of the vascular system, particularly hypertension, the lesion characteristic of diabetes is superimposed on the other lesion, giving a composite picture that is still characteristic, so that the trained observer can diagnose from it the presence of diabetes mellitus.

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ARTIFICIAL MENOPAUSE IN CARCINOMA OF THE BREAST*

BY GRANTLEY W. TAYLOR, M.D.†

THE close relationship between the activity of the ovary and the growth and development of the breast was widely recognized long before modern hormonology attempted to provide an explanation of the mechanism. In the course of several years, evidence has been accumulated tending not only to establish the normal relationship, but also to argue for the dependence of abnormalities of the breast on ovarian hormonal activities. No attempt will be made to present a comprehensive review of the literature, but it is worth while to present some of the main types of evidence bearing on this point.

Rosenburg[1] first histologically demonstrated the cyclic changes taking place in the breast along with the menstrual cycle. Marked changes in the ovarian function, in puberty, pregnancy, and lactation, are closely paralleled by changes in the breast. Taylor[2] correlated abnormalities of the breast with evidences of abnormal ovarian function. He suggested that if the growth of an organ is normally dependent on certain stimuli, changes, including abnormal growths in the organ, will be dependent on the same stimuli, and perhaps caused by abnormalities of these stimuli. Promising attempts have been made to influence abnormalities of the breast by administration of hormone preparations (Cutler[3]). Recent work demonstrating the concentration of ovarian hormone in the substance of the breast, in connection with local abnormalities, is very suggestive (Geschickter, Lewis and Hartman[4]).

Progress in the understanding of carcinoma of the breast has brought out many facts which have some bearing on the influence of ovarian activity. Local etiological factors for carcinoma in this region appear to be of lesser significance, while general systemic factors are of more significance. Thus Kilgore[5] and McWilliams[6] have emphasized the frequency of occurrence of independent carcinomata in both breasts. Trout[7] found that carcinoma develops in the remaining breast in a high percentage of cases if pregnancy occurs subsequent to removal of one breast for carcinoma. The extremely malignant character of carcinoma of the breast complicating pregnancy or lactation is widely recognized. There is a growing body of evidence, and rather general belief, that carcinoma of the breast in young women is more malignant and less curable than in older women. The virulent so-called "inflammatory" carcinoma of the breast is rarely seen except in younger women.

Laboratory confirmation of the relation of the ovary to breast carcinoma came in the work of Lathrop and Loeb[8], and Cori[9]. These authors were able to diminish markedly the incidence of spontaneous mammary carcinoma in a susceptible strain of mice by castration at a very early age. Castration at a later age caused a less pronounced decrease in the incidence. Transplantation of the ovaries into male mice of this strain caused the development of spontaneous mammary carcinoma in a certain number of the males.

In the light of evidences of this sort, some of which have been long available, it is not surprising that attempts should have been made to affect the course of carcinoma of the breast by removal of the ovaries.

Schinzinger proposed oöphorectomy in the treatment of carcinoma of the breast in 1889, and independently, Beatson[10] arrived at the same conclusion and reported three cases in 1896. For a time the operation enjoyed a considerable vogue as an aid in the treatment of inoperable carcinoma of the breast. Thus, Thomson[11] reported eighty cases in 1902, with decided improvement in 22.5 per cent. Lett[12] in 1905 reported ninety-nine cases, with improvement in thirty-six per cent, but with an operative mortality of six per cent. Various other reports followed sporadically but interest in the procedure gradually died out; possibly in part because of the definite operative hazard, and possibly also because the development of radiation therapy offered a new and more direct method of attack on recurrent and inoperable breast carcinoma. It is noteworthy that all of these earlier writers recorded definite improvement in a certain number of cases, as indicated by regressions of observable lesions, lasting in many cases for months or even years. Thomson[11] concluded that it was impossible to foretell which cases would benefit by the procedure, that results seemed to be better with slowly growing carcinomas, and that some patients benefited from oöphorectomy even after the menopause.

In recent years the possibility of radiation castration gave new interest in Beatson's[10] method of treating inoperable carcinoma of the breast. Wintz[13] has been radiating the ovaries routinely in his cases since 1920. Ahlbom[14] has employed Roentgen castration in a series of cases at the Radiumhemmet since 1922. Kaplan[15] in 1927 stated that he recommended radiation castration in inoperable carcinoma of the breast. Many others have carried out radiation of the ovaries in these cases, either as part of a general plan of treatment, or even almost unintentionally, in the course of treatment to relieve pain due to metastatic involvement of the pelvis. Many patients who have thus been radiated have shown striking regressions of metastatic lesions, even in areas which

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received no radiation. Such a case was reported by Hoffman[16], who observed disappearance of scalp metastases following pelvic radiation. These regressions are not often reported, but they are very impressive and dramatic when they occur (Daland[17], Martin[18]). The procedure is too recent in most cases to permit any statement as to duration of the regressions so produced. Ahlbom[14] concluded, as a result of his careful study of the series of 163 cases sterilized at the Radiumhemmet, that there is no proof that radiation castration combined with local radiation therapy is more advantageous than local radiation alone. There were some striking regressions in the series, but nearly all his patients received local radiation as well. The best results from castration, compared with the controls, occurred in the group over forty-five years of age. In his series, seventy-three per cent of the cases showed improvement as a result of the treatment and in no case was any harm demonstrable.

There is some ground for supposing that the effective dose of radiation to bring about cessation of hormonal activity of the ovary has not been accurately determined. In fact, Kaplan's[15] patient became pregnant following Roentgen sterilization. There is considerable ground for supposing that a much larger dose is necessary than is usually employed, especially in young women.

On the strength of this evidence, thus briefly presented, it is justifiable to formulate tentative therapeutic policies.

In the management of inoperable or recurrent carcinoma of the breast, radiation castration is a procedure which may be of definite benefit to the patient. Sometimes benefit may be derived from radiation of the ovaries even after the menopause has occurred, although more promising results can be expected in younger women. Menopausal symptoms in Ahlbom's[14] series were not severe and no dangers or complications arose as a result of the radiation. Some patients may object to this procedure. They should be advised that pregnancy would produce a serious aggravation of their condition.

In regard to primary operable carcinoma of the breast complicated by early pregnancy, the outlook is extremely grave under any circumstances. Almost the only possibility of cure in such a case would lie in prompt abortion and radical mastectomy. It would be consistent in these circumstances to add radiation castration as an additional safeguard, to prevent the possibility of future pregnancy, and to take advantage of any inhibitory influence on growth of the disease which might be secured by termination of ovarian activity. Operable carcinoma of the breast is rarely found in the late stages of pregnancy. In this instance, the prognosis for cure of the carcinoma is so poor that it is probably justifiable to wait for a viable child.

So far as I am aware, no one has proposed radiation castration as a routine treatment in cases of uncomplicated operable carcinoma of the breast, along with radical operation. This proposal is justified first of all by safeguarding the patient against a subsequent pregnancy. Trout[7] collected fifteen instances of subsequent pregnancy, in thirteen of which there was prompt development of highly malignant carcinoma of the remaining breast. While this is a small series, and while there may not be such a high incidence of carcinoma of the remaining breast as these figures suggest, Trout's study clearly indicates that a subsequent pregnancy is extremely hazardous. Wintz[13], quoted by Ahlbom[14], presented seven instances of subsequent pregnancy which terminated disastrously, but it is not stated whether the second breast developed carcinoma or whether the pregnancy merely aggravated latent metastases from the original growth.

The problem of the young woman, apparently free from recurrence after operation, who wishes to be married and to have children, is a very difficult one. It may be that in this case, as in the case of others who object to radiation castration, it would be wise to recommend prophylactic amputation of the remaining breast, as originally proposed by Kilgore[5].

Another justification for radiation castration as a part of the routine treatment of primary operable carcinoma of the breast, especially in young women, is the possible inhibitory influence on the development of metastatic deposits to be secured by suspension of ovarian activity. Certainly the observed regressions in demonstrable metastases secured by this procedure would justify the expectation that microscopic foci in the bones and lungs might be similarly arrested.

It is recognized that further evidence is desirable to establish radiation castration as a valuable procedure in the treatment of breast carcinoma. The material available for study is suggestive rather than conclusive, and further studies are desirable as to the behavior of the remaining breast during subsequent pregnancies; as to the effective castration dose of radiation, especially in young women; and as to the results of radiation castration prophylactically after breast amputation, and therapeutically for recurrent or inoperable carcinoma of the breast.

The remarkable regressions in certain cases following castration call for further histological studies to determine if possible beforehand which cases will be most likely to benefit by the procedure. It may be that breast carcinomas

can be classified on the basis of their degree of dependence on hormonal activity.

On the basis of our present knowledge, it seems fair to reach the following conclusions:

1. Patients with inoperable and recurrent carcinoma of the breast may be benefited by radiation castration. Younger patients may be expected to respond more favorably.

2. Radiation castration following radical operation may inhibit or postpone the development of metastases.

3. Subsequent pregnancy involves a grave hazard of activating recurrence or of stimulating development of primary carcinoma of the second breast and should not be permitted. In the cases who refuse radiation castration, simple mastectomy of the remaining breast should be considered.

4. The treatment of operable carcinoma of the breast complicated by pregnancy should include prompt abortion.

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THE CLINICAL STATUS OF VITAMIN D MILKS*

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ORDINARY milk cannot be depended upon to prevent infantile rickets. Its vitamin D content is too low[25]. The antirachitic effectiveness of milk can be increased by any one of several methods, of which three have attained commercial development.

I. Yeast Milk, secured from the cow after including irradiated yeast in the feed.

II. Zucker Process Milk, prepared by adding to cows' milk a concentrate of cod liver oil.

III. Irradiated Milk, subjected to the action of ultra-violet light before bottling.

Because each of these three milks has been found to have enhanced antirachitic effect on young animals, and because the antirachitic principle first discovered was named "vitamin D", it is natural that these milks should be classed as vitamin D milks.

Vitamin D is the name given by McCollum[15], twelve years ago, to a substance, associated with certain fats, which possesses the power to initiate the healing of rickets. Cod liver oil was found to be the natural source of the most concentrated vitamin D principle; later the oil of the liver of certain other fishes was found to be in a similar category; butter was proved to be a variable but relatively low source of D; and egg yolk a somewhat less variable but more potent source than butter. The other natural sources of this vitamin in foodstuffs have been shown to be extremely limited.

At about the same time that vitamin D was located—but not isolated—and named, Zucker[24] devised a method for recovery of an antirachitic principle from the non-saponifiable portion of cod liver oil. Patents covering this method protect the Zucker process.

Approximately contemporaneously with the isolation of vitamin D came complete corroboration of the earlier reports that ultraviolet light on the skin of animals can cure or prevent rickets. Next there developed the combination of these two findings in the irradiation of foods leading to the Steenbock patent for irradiating foods with ultraviolet such as is obtainable from a quartz mercury vapor

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lamp. An application of the Steenbock process is the irradiation of yeast which in dried form is then fed to cows to enrich the antirachitic potency of milk.

In 1927 ergosterol, associated ordinarily with cholesterol, found in various plant and animal tissues, was hailed as the established precursor of vitamin D, since upon suitable exposure to ultraviolet light, ergosterol takes on antirachitic properties. Three years later there was derived from irradiated ergosterol a crystalline substance of still more concentrated antirachitic potency, now called calciferol, and popularly regarded as pure vitamin D.

Vitamin D, however, is the name given to the antirachitic principle in cod liver oil and its identity with calciferol has never been established. In 1931 the late Dr. Alfred Hess stated, "I have for the last five years or more frequently brought up the question of whether this vitamin D is really a vitamin. In fact, some may have noticed that I have for years spoken of it as antirachitic factor."[8]. In 1932 the same author stated his belief that there is in the etiology of rickets a factor quite apart from a lack of vitamin D. In the same year Steenbock stated unequivocally his conviction that the vitamin D produced by irradiation is a different substance from that found in cod liver oil. In 1934 Kon[11] in England presented convincing evidence that "at least two factors, antirachitic for the rat, are present in butter; a factor which is not recoverable in the non-saponifiable residue, and" . . . (another factor) . . . "the usual vitamin D (whatever this term may imply)." Kon found, in agreement with Zucker, that he was unable by the Zucker process to extract from butter its entire antirachitic principle, and contrary to Zucker, was by the same process not able to extract all the antirachitic potency even from cod liver oil.

In our own laboratory we have found by repeated trials that the inclusion of casein freed of detectable "vitamin D" factor, in a diet otherwise rachitogenic, tends to prevent the development of decided rickets in rats.

In July of the current year, Waddell[20] reported that the action of ultraviolet light upon cholesterol, freed of ergosterol, renders the cholesterol itself antirachitically effective in treating the bone weakness of chicks, a finding which is in accord with the report of Bills et al[3] in 1928.

It is well known that the administration to children of irradiated ergosterol meets with less clinical success than the older therapy of cod liver oil unless the unit dosage of the former is greatly increased over that of the latter.

Thus, at the present time, it is an established fact, through laboratory and clinical evidence, that not all antirachitics are identical. Each has one efficiency for chicks and another for rats and perhaps, a third for infants, but irrespective of the proposed use, any antirachitic is ordinarily evaluated in terms of rat therapy.

The reasons for the use of the white rat as a test animal are many and need not be detailed at this time. It should be sufficient that the method of assay of the United States Pharmacopeia and of the League of Nations Health Organization prescribe the use of the albino rat as a test animal. Repeated assays can be duplicated with some degree of consistency with rats. Different laboratories are able, by employing rigorous precautions in the use of the rat, to derive comparable values from duplicate samples. Likewise, it is only too true that there are many pitfalls in the technique of the assay with rats into which the inexperienced may unwittingly fall. For determining the effectiveness of such substances for the cure of rickets in rats, the rat test is satisfactory, but unfortunately the problem faced by the medical profession is not the cure of rickets in rats but the prevention of rickets in babies. The bio-assay with albino rats is the best tool we have for estimating comparative potencies of different batches of the same kind of material, but for comparing the effectiveness of different materials it often distorts the picture.

In the standard bio-assay, there is determined the weight of material under test which when fed to rachitic animals over eight days, will, by the tenth day, have produced a specified degree of healing. Such a determined weight of the substance under assay is said to contain one Steenbock Rat Unit of vitamin D. This is a quantity that can be measured. A different unit consists of one milligram of a standardized solution of irradiated ergosterol prepared at the National Institute for Medical Research in London, the International Unit of the Permanent Commission on Biological Standards of the League of Nations Health Organization. The weight of any antirachitic substance fed in the above manner which brings about a degree of healing equal to the healing from one milligram of the standard solution, or its equivalent, is said to possess one International Unit. Beginning January 1, 1935, the U. S. P. Unit will equal the International Standard, and by custom such equivalence is recognized to-day. Since, however, the effect of one International Unit cannot be exactly measured, while the Steenbock unit can be measured, it is customary to feed enough unknown to develop a healing corresponding to the latter. This is substantially 2.7 International Units.

Milk rated as having 160 units per quart has the equivalent of 160 Steenbock rat units or 432

International or U.S.P. units. The custom of rating milks for human consumption in terms of rat units is tolerated only because at present no better method of evaluation is known. A more reliable criterion for clinical units is urgently needed, and its lack is responsible for many misunderstandings regarding the relative values of vitamin D milks to the consumer.

From the point of view of the consumer, the value of such milks lies in the benefit that can be confidently expected from the consumption of a given reasonable quantity of vitamin D milk over that obtainable from normal cows' milk. In evaluating the published clinical evidence on the three kinds of vitamin D milk now readily available, such a basis has been adopted. The comparison is made between a pint of one kind and a pint of another. The unit value placed on each milk is of no moment, provided that for a given kind of milk the value, whatever its phraseology, is always the same, and provided that said unitage represents adequate human protective potency.

May we recite the trite, but truthful, saying that statistics can be made to prove anything. It is equally true that sweeping conclusions drawn from too few statistical observations are often erroneous conclusions.

With this preamble, the following analysis is offered of that part of the existing published data which applies to the evaluation of any of the three kinds of vitamin milks specified, excluding the interesting but not germane observations on other matters which some of these reports include.

In chronological order of date of publication, the first clinical test on the feeding of infants with vitamin D whole milk produced in this country was that of Hess, Lewis, MacLeod and Thomas[8] in 1931. Selecting from this report all the material pertinent to this discussion, it is found that 19 out of the 102 infants of one and one-quarter to 6 months of age at the start of the test, selected from baby clinics in New York, in the month of January had prescribed for them daily for approximately three months, an average of 24 ounces of milk from cows which had received a ration supplemented with irradiated yeast. Feeding was carried out in the homes of the patients under the supervision of one nurse for over 100 infants. In an eight-hour day this nurse could have spent not over four and three-quarters minutes with each case if she took no time to travel between homes. Obviously the supervisor could not humanly know all about the entire diet of each case. Of the 19 in the group, of whom three showed, at the outset, x-ray evidence of rickets, all are reported to have been free from this disease at the end of three months. The authors conclude that the results are clear cut; the yeast milk was found to prevent as well as to cure rickets.

With every wish to avoid captious criticism, and with the realization that this test represents an important beginning of a series of tests, which could properly be expected to improve in technique with experience, nevertheless, it must be confessed that the potency of the milk administered, expressed in any form of unitage imaginable, can only be estimated and not definitely known from any data available to-day.

The yeast milk was presumed to be of potency equivalent to 160 rat units per litre, which is substantially 151 rat units per quart. The fragmentary data on bio-assay findings consist of weights of butter fat fed to rats to produce healing of varying degrees. Even if the butter fat content of the milks had not been omitted from the report, one could not estimate with any degree of accuracy what these line test findings mean. In a later paper, the same authors[10] state that a bio-assay was not carried out on the identical milk fed in this the first test. The irradiated yeast fed to the cows in this test is reported to have been for the group reviewed, 60,000 rat units per cow per day.

In 1934, Russell, Wilcox, Waddell, and Wilson[19] report that feeding 60,000 measured units of yeast per day to cows secured for them a milk of 35 units per quart potency. According to this finding, if the milk supplied to Dr. Hess was from cows fed actually 60,000 units in yeast, then the potency of this yeast milk was of the order of 35 units per quart. Likewise, Russell and his collaborators found that 180,000 units in yeast per cow per day was necessary to give a milk of 156 units per quart average potency. If then the milk used by Dr. Hess was actually of 160 units per litre potency, the yeast fed must have been of three times its rated potency. While it is probably true that yeast in the early days was rated conservatively on a basis of "at least" so many units per pound, does it seem likely that the margin of safety adopted by the manufacturer was 300 per cent?

The questioning of the validity of the assumed potency of the milk of this test is supported by the yeast feeding schedule supplied to licensees under the Wisconsin Alumni Foundation in 1934 for producing milk of 160 units per quart potency from cows which give daily 35 pounds of milk. This schedule calls for 4.7 ounces per day of 70 D yeast, equivalent to approximately 124,000 rat units per day. Is it reasonable to suppose that in 1934 there is required twice the unitage of irradiated yeast that was needed in 1931 to produce milks of identical potency?

Under the conditions of this first clinical test, yeast milk of undetermined antirachitic potency, when fed in average quantities of 24 ounces per day, apparently cured three cases of roentgenologic rickets in three months, and was not

followed by the appearance of rickets in the 16 other cases.

The second clinical report is that of Wyman and Butler[22] in 1932. Four cases of definite rickets under hospital care throughout were each fed 32 ounces of yeast milk per day (in one case, 40 ounces) for approximately six weeks. Each of the cases was observed prior to feeding until it was evident that no spontaneous healing was under way. Blood calcium and phosphorus determinations are given. In one case the milk was boiled. The authors report that on the yeast milk administered at 32 or 40 ounces per day to infants or children with definite rickets, there was in two weeks' time definite evidence of healing which progressed throughout the test.

The milk used was not subjected to bio-assay. From original data supplied to us by the Walker-Gordon Company in one of whose herds this milk was produced, we calculate that "at least" 59,328 rats units per cow per day were fed in the yeast, placing the potency of this milk presumptively on a parity with that used by Hess in the paper previously reviewed.

In August 1932, there appeared the third report[9] on the clinical use of vitamin D milk, this time irradiated milk, by Hess and Lewis. Out of 100 cases, the clinical findings and final roentgenogram interpretations are tabulated for only 36 infants showing no initial evidence of rickets and 14 others who showed roentgenographic rickets at the start. The cases were of the same age group and from similar clinics as in the first Hess report. One nurse supervised the home feedings of 98 cases reported.

The report indicates that of the 36 non-rachitic infants, 35 failed to develop rickets in three months with 24 to 32 ounces of irradiated milk per day; of the 14 rachitic cases all are reported to have shown definite signs of healing in four to six weeks. One cannot be sure that such signs of healing would not have been detected earlier had the cases been under such close observation as those of Wyman and Butler, but the findings are presented as reported by the authors.

The irradiated milk was reported to be of 50 units per quart potency. The identical milk fed to the infants was not made the subject of bio-assay (loc. cit.), but based on our experience with various samples of irradiated milk on the market in 1934 this value is quite reasonable.

The authors state their belief that from this test and the one previously reported by them it is not possible to compare the efficacy of irradiated milk with that of yeast milk.

The next clinical test reported is that by Mitchell, Eiman, Whipple and Stokes[17]. In our opinion, the report fails to present sufficient data from which to draw conclusions, and may be postponed for consideration until such time as the final findings are presented, which the authors state their intention to do at a later date.

The next paper of Hess and Lewis[10] in 1933, reports a test planned to compare the relative efficiencies of irradiated and yeast milk in curing roentgenographically diagnosed rickets, the evidence of healing being additional x-ray examinations after a period of four weeks. Infants selected from clinics were fed at home under nurse supervision as in the previous test by these authors.

Of 4 infants fed 24 ounces per day irradiated milk of reported value 56 units per litre (53 units per quart), 3 with marked rickets at the outset showed marked healing in 4 weeks and the remaining 1, with slight rickets at the start, showed some healing in the same time.

Of 5 infants fed 24 ounces per day of yeast milk of reported value 120 units per litre (113.5 units per quart), 3 with initial diagnosis of moderate rickets showed definite to decided healing in 4 weeks; the other 2 with initial slight to moderate rickets showed some healing in the same time.

Of 5 infants fed 24 ounces per day of "80" units per litre yeast milk (75.6 units per quart), 2 with initial moderate rickets showed definite healing at four weeks; 2 with slight to moderate rickets showed some healing, and the remaining infant with initial slight rickets showed healing at six weeks.

Six other infants receiving each only 16 ounces per day of irradiated milk of the above potency did not do so well.

No data are presented in support of the reported unit values of the milks used. The authors describe conditions of irradiating milk calculated to produce 50 to 60 units per quart. In the text of the report they state that irradiated milk of this kind (used by them) "is rated at 56 units per quart" but in the table presented the value is given as 56 units per litre. In regard to the yeast milk they state that based on their experience in their last investigation they felt that 160 units was unnecessarily high and accordingly fed the cows an amount of yeast sufficient to yield about 120 units per quart. The amount of yeast selected is not stated. The authors further state that repeated assays proved that this milk varied from 110 to 120 units per quart and the weaker yeast milk 75 to 80 units. In view of the importance which has been attached to interpretations of these findings, it is a source of regret that the data in support of these reported bio-assay values are not available.

From the evidence presented it can be deduced that some healing of roentgenographic rickets came about in four weeks after feeding 24 ounces per day of irradiated milk of

substantially 50-56 units per quart, and likewise after feeding 24 ounces per day of yeast milk reported to be of 75 or 80 units per quart.

The number of observations in this study is small and the conditions of feeding not sufficiently susceptible of rigid control to warrant a general comparison of the relative benefits to be expected by the consumer of a given quantity of either kind of milk. Each was shown to be capable of benefit to a child subject to rickets.

The report of Kramer and Gittleman[12] in 1933 involved the use of yeast milk, reported as of 80 units per quart potency diluted with Grade A milk to give a mixture of 55 or of 40 units calculated potency, compared with irradiated milk reported as of 55 units per quart, sometimes diluted with Grade A milk to give a calculated potency of 40 units. The number of cases is not large, but all were hospitalized throughout the test. All were observed for a preliminary period before treatment until evidence was conclusive that spontaneous healing was not present. Three cases of rickets on 32 ounces of 40 unit yeast milk were studied. Convincing evidence is reported of healing in each case in from 2 to 4 weeks, as shown by x-ray findings and serum Ca and P determinations.

The conclusion offered by the authors that rachitic infants showing a low serum calcium or phosphorus or a decrease in the level of both elements in the serum responded equally well to both types of milk when fed at either high or low level, seems to be well supported by the evidence presented.

The most recently published clinical report on vitamin D milk is that of Drake, Tisdall and Brown[6] in October, 1934. Irradiated milk of potency of 56 units per quart was fed to 141 infants during 5 winter months in Toronto. The cases were not hospitalized and diagnoses were based upon roentgenograms. There were four groups of infants:

Group A, 38 infants under 4 months of age, received daily 20 ounces of milk. At the beginning of the test period 34 showed no rickets, but at its close, only 27.

Group B, 9 infants under 4 months of age, received daily 20 to 40 ounces. At the start, 9 showed no rickets and at the end, only 7 were non-rachitic.

Group C, 33 infants from 4 to 8 months old, received 20 ounces per day. Of these, 28 showed no rickets at the start, but at the end, 32 were non-rachitic.

Group D, 61 infants from 4 to 8 months old, received daily 20 to 40 ounces. Of these, 49 were non-rachitic at the start, but 60 showed no rickets at the close of the test period.

This analysis of the data indicates that under the conditions of this clinical test, infants of less than 4 months of age were not completely protected by 20 to 40 ounces of 56 unit irradiated milk daily for five winter months, but that older infants were protected by even 20 ounces daily of this milk, and moreover, there were some cures of initial slight rickets in this older group.

These findings are not reflected in the summary by these authors in which the two age groups are treated as a whole with the statement that "under these conditions no infants developed moderate or marked rickets," a statement, which in the absence of formal conclusions, is likely to be quoted without context and to carry a meaning which the authors probably did not intend. We agree with the opinion expressed by them that, under conditions similar to those in Toronto during this test at least, "it is desirable during the early months of life to supplement the vitamin D administered in the form of (irradiated) vitamin D milk with some other antirachitic substance."

In the spring of 1934 an investigation was inaugurated under Wyman of the Infants' and Children's Hospital in Boston, designed to compare the actual effects of prescribing to alternate cases of definite rickets in infants, yeast milk and irradiated milk of equal rat unit potency, in the amounts called for by the ordinary pediatric procedures indicated for each case as it came along. The report of this work is in press[23] and reference to it is made herewith by permission of Dr. Wyman.

Like the previous clinical tests of similar nature by the same author, the recently concluded test is marked by close attention to detail, and by data which are unusually complete.

The work met an unexpected handicap in the failure to locate a large number of cases of sufficiently definite rickets to make statistical evaluation of results possible.

Between January and April, six cases of clear-cut rickets uncomplicated by other disease were hospitalized, and these were divided equally between the two kinds of milk, which had been planned to be of equal potency. Five bio-assays of each milk, with numerous parallel International Standard comparisons were made during the clinical test, at the Biological Laboratories of the Massachusetts Institute of Technology. The yeast milk was definitely between 60 and 65 Steenbock rat units per quart; the irradiated milk remained at substantially 50 units per quart.

Each case at the outset was definitely high calcium-low phosphorus rickets diagnosed by x-ray, clinical findings, and blood chemistry evidence; each case was given 26, 28, or 32 ounces of vitamin D milk per day and followed in hospital with frequent roentgenologic and blood tests and each case showed by the end of the fourth week, or earlier, definite evi-

dence of healing from rickets irrespective of which kind of milk was used.

Apparently contemporaneously with the latest Wyman test is that of Gerstenberger, Krauss, and Bethke[7] reported briefly at the Cleveland meeting in June, 1934 of the Certified Milk Producers Association, a full report of which is now in press. The investigation was planned to study irradiated and yeast milk of the same potency when fed to hospitalized cases in amounts of 24 and 16 ounces daily. The milks were produced at the Ohio Agricultural Experiment Station and furnished to the Department of Pediatrics of the University Hospitals, Cleveland.

According to the report of Bethke made at Cleveland, it is our understanding that 55 units per quart was the potency designed for each type of milk. Regulation line test bioassays were further checked by feeding butter fats to rats in prophylactic doses. The tentative conclusions of Bethke in June were that the irradiated milk was slightly more highly fortified than the yeast milk in the ratio of 6:4 but it is understood that further work has continued during the summer, the results of which are not yet available, to secure an accurate comparison of the rat unit potencies of these two milks.

It may be assumed that the potencies of the two kinds of milk were as nearly identical in terms of rat units as in any clinical case to date, involving undiluted milk.

It is our understanding of Dr. Gerstenberger's verbal report that at each level each milk showed complete healing in terms of serum Ca and P in 66 to 90 days, and that either yeast milk or irradiated milk of substantially the antirachitic potency represented by 55 rat units per quart, when one pint per day is fed, was able to bring about slow but complete healing of rickets in infants. The actual statistical report is awaited with interest.

The literature on the efficacy of Zucker Milk is less prolific. In April, 1933, Barnes[1] published a note to the effect that 15 rachitic infants had been given each 24 or 32 ounces of Zucker Milk prepared to have a potency of 150 rat units per quart, and that all recovered promptly. No data were furnished pertaining to the test.

In the current year, Wilson[21] reports a study of 33 infants from 2 to 13 weeks of age, fed in their homes under nurse supervision over a period of from 3 to 6 months with Zucker milk of potency calculated to equal 150 Steenbock units per quart. From 17 to 32 ounces per infant per day were administered, the average intake being 26 ounces.

The author reports that more than half the cases observed developed some degree of rickets as determined by x-ray findings but without serum Ca and P determinations.

Also in 1934 there has appeared an article by Barnes[2] which reports that 32 normal infants were protected from November or December to the following April on one pint of Zucker milk daily, a reputed daily intake of 50 units. Six other infants, entering the same test under like conditions but with initial rickets, are reported to have healed gradually and definitely. A control group of 25 infants picked at random from clinics showed 14 with active rickets in April.

The abstract form of the sole publication on this study precludes the inclusion of the data necessary to make possible an evaluation of the reported findings.

Thus the published evidence to date on the efficacy of whole milk containing Zucker concentrate is insufficient for comparing its record with that of the other two kinds specified. In view of the apparent conflict between Wilson's findings on the one hand, and the two papers by Barnes on the other, it is only fair to withhold judgment until further and convincing data are available.

DISCUSSION

In appraisal of the available evidence concerning the value of vitamin D milks, in respect to their antirachitic effect when fed to infants, it is our opinion that yeast milk and irradiated milk, as to-day obtainable on the market, have both been proved to be valuable in curing and in preventing rickets, when used in the amounts and in the manner usually indicated for milk in infant feeding; that the more carefully controlled experiments fail to show any distinct difference between the relative efficacies of the two types of milk mentioned, in terms of rat unit equivalent potencies, and that in view of this fact, it is reasonable to expect more antirachitic benefits from that type of milk which offers the larger unitage per quart.

Evidence is still needed concerning the apparent unusual requirement of the very young infant in respect to antirachitics; concerning the minimum antirachitic potency of milk required to protect surely all infants against rickets; concerning the potencies required, not only to protect infants or to cure rickets, but to insure the most desirable rapidity of the healing process.

Before Zucker milk can be evaluated in terms comparable with the other two kinds of vitamin D milk discussed, more clinical data must be available. We are informed that such data are now before a committee of the American Medical Association, and the report of this committee is awaited with interest.

Concerning the value of vitamin D milk to the adult human consumer, evidence is not conclusive. The relation established between vita-

min D and bone development has suggested a similar relation in respect to teeth. Among the reports of work upon this subject, the recent papers of Mellanby[16], especially, attach a certain value to antirachitics in warding off dental caries, and one may cautiously assume that such values of this sort as may exist ought to inhere in vitamin D milks. If such values do reside in antirachitics, then the antirachitic of milk should be in an especially favorable medium, since it is recognized by all that among the dietary factors of definite importance in the formation and retention of a sound dentition, calcium and phosphorus take high rank.

The effect of vitamins in the diet upon the incidence and severity of common infections has received attention and investigation. In a recent publication, Clausen[5] presents an excellent review of the published evidence in this regard. In respect to the relation of vitamin D to adult infections this author states, "It seems obvious that there is no good reason to expect that the resistance of non-rachitic animals to infection can be increased by antirachitic agents; neither is there, from experimental work quoted, any very striking evidence for the general belief that lack of vitamin D predisposes to infection."

In the pregnant woman there exists an unusual need for calcium, phosphorus, and vitamin D because of the requirements of the developing embryo. For such a case, it appears to be of advantage to be able to obtain in vitamin D milk the necessary supply of all of these factors. It is, however, not a matter of record how much vitamin D milk of any particular potency will be entirely adequate to supply all the special nutritional needs of pregnancy.

Likewise for the nursing mother, milk is an approved element of her diet, and the potency of her breast milk has been shown to vary with her intake of vitamin D. As demonstrated by Bunker, Harris and Eustis[4] "the antirachitic potency of human breast milk can be augmented in a simple and acceptable manner by including vitamin D milk in the diet of the mother."

Lewis[13], on the contrary, has very recently

SUMMARY OF PUBLISHED CLINICAL REPORTS ON VITAMIN D MILKS (To October, 1934)

Author	No. Cases Rick.	Non-R.	Type of Milk Amt. per Day	Steenbock Units/qt.	Serum CaxP*	Test Period	Reported Results
Hess '31	3	16	24 oz. Yeast	35-151 (?)		12 wks.	3 cured; 16 prevented.
Wyman '32	4	0	32 oz. Yeast	35-151 (?)	28-66	5 wks.	4 definite healing 2 wks.
Hess '32	14	36	24-32 oz. Irrad.	50		12 wks.	14 healing; 33 prevented.
Hess '33	4	0	24 oz. Irrad.	53		4 wks.	4 healing.
	5	0	24 oz. Yeast	113.5		4 wks.	5 healing.
	5	0	24 oz. Yeast	75.6		4-6 wks.	5 healing.
	6	0	16 oz. Irrad.	53		4 wks.	5 healing; 1 questionable.
Kramer '33	3	0	32 oz. Yeast	40	34-55	4 wks.	3 advanced healing.
	2	0	32 oz. Irrad.	40	31-59	6 wks.	2 advanced heal. 4 wks.
	2	0	32 oz. Yeast	55	28-58	6 wks.	2 advanced heal. 4 wks.
	3	0	32 oz. Irrad.	55	27-57	8 wks.	2 advanced heal. 3 wks. 1 advanced healing.
Barnes '33	15	0	24-32 oz. Zucker	150		?	15 "recovered promptly".
Wilson '34	0	33	26 oz. Zucker	150		3-6 mos.	½ developed some rickets.
Barnes '34	6	32	16 oz. Zucker	100		4 mos.	6 healed; 32 prevented.
	?25	?	? oz. regular	5?		4 mos.	14 developed rickets.
McBeath '34			16 mothers 32 oz. Yeast from 6 mo. pregnancy through 6 mo. lactation	160		12 mos.	6 infants developed rickets.
			26 mothers control group no vitamin milk as above	5?		12 mos.	23 infants developed rickets.
Drake '34	4	34	20 oz. Irrad.	56		5 mos.	27 normal, 8 very slight, 3 slight rickets.
	0	9	20-40 oz. Irrad.	56		5 mos.	7 normal, 2 very slight rickets.
	5	28	20 oz. Irrad.	56		5 mos.	32 normal, 1 mild rickets.
	12	49	20-40 oz. Irrad.	56		5 mos.	60 normal, 1 mild rickets.

*Unless stated, serum Ca and P were not determined.

stated that "the administration of vitamin D milks to nursing mothers does not necessarily protect their infants against rickets; antirachitic agents must be given directly to breast-fed infants to insure protection."

McBeath and McMahon[14] feel that they have shown a "definite reaction against rickets in the young by the use of yeast milk during pregnancy, lactation, and as a complemental feeding." In 16 cases mothers were furnished with one quart per day of 160 unit yeast milk from about the sixth month of pregnancy to the sixth month of lactation. The babies of this group showed less incidence of rickets than those of the control group without vitamin D milk, although the authors report that the majority of the latter (control) group received some cod liver oil at various periods.

These results suggest to us the desirability of a further clinical test to determine whether the prenatal use of vitamin D milk confers a prenatal antirachitic benefit which will be to the advantage of the infant after its birth.

On the other side of the picture there remains unanswered the question of whether there are qualities in any type of vitamin D milk which in the long run may prove undesirable. There is to date insufficient evidence upon which to base a decision. Such evidence must be obtained in order to definitely dispose of this question conclusively. There are those, also, who look askance at what they term "a tendency of manufacturers to avail themselves of the publicity value of recent vitamin research by adding vitamins empirically to a variety of foods without due consideration of the results which may accrue from such haphazard practices." (Sir George Newman, Chief Medical Officer of the British Ministry of Health[18].) In Denmark vitamins are regarded as drugs, to be administered under prescription by the physician. Their addition to milk is not permitted by law.

SUMMARY

Vitamin D milk, proved to be useful in the diets of infants and their mothers, and not yet shown to produce undesirable effects by its use, has an apparently definite useful value. What the most desirable antirachitic potency of such milks may be has not yet been proved. Whether there reside in such milks values to the normal adult not inherent in ordinary milk, only the future can tell.

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THE EFFECT OF ACUTE RESPIRATORY TRACT INFECTIONS UPON LATENT SILICOSIS

BY JOHN B. HAWES, 2ND, M.D.,* AND MOSES J. STONE, M.D.*

OUR ideas concerning silicosis have undergone radical changes during the past ten to fifteen years. For instance, it was at first generally accepted that the pathological changes in the lungs following inhalation of granite dust were purely mechanical in nature, each particle of silicon acting as a foreign body thereby causing a fibroid reaction around it. Now thanks to the work of Gardner, Cummings, and others we are coming to the opinion that these changes are probably more due to a chemical-colloidal

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process the exact nature of which is still in doubt and that the mechanical factor does not play so important a part.

Likewise, in regard to the length of exposure necessary to produce marked changes in the lungs it was formerly generally held that at least twelve to fifteen years of intensive exposure to granite dust was necessary before much permanent harm could be done. Now we realize that such is not always the case and that certain individuals, whose resistance to silicon must be low, develop pathological changes in their lungs resulting in disability as a result of only a few years of exposure. This has been clearly brought out in the proceedings of the International Commission for the study of Silicosis in 1929 and again in 1930 at the International Conference on Silicosis held at Johannesburg.

Again, ten to fifteen years ago it was the general opinion of investigators of this subject that the disease silicosis does not tend to progress once the exposure to silicon-bearing dust has ceased. We now know that under certain circumstances this condition does grow progressively worse. Although the average case of pure silicosis without tuberculosis once the dust exposure is ended, changes very slowly if at all, as has been shown by W. I. Clark in his extensive clinical investigation of this subject on workers in one of the largest abrasive plants in this country, certain cases are now being reported which tend to show that silicosis which has been dormant for many years often quite unexpectedly may in a very short time become active so as to produce marked symptoms *providing certain factors are present.* One of these factors is an acute infection of the respiratory tract such as pneumonia, influenza or even an acute bronchitis. The following two cases are such striking examples of this that we feel they should be reported.

CASE No. 1. M. R., a man, aged forty-seven, was first seen January 19, 1934 complaining of cough and shortness of breath. He was born in Russia and came to this country twenty-six years ago, since when he worked for ten years in a shoe factory and for the past sixteen years in a small grocery store. Until recently he has been perfectly well.

In January, 1933, one year prior to the time he was first seen by us, this man had a very severe attack of influenzal pneumonia during which he was seriously ill requiring the administration of oxygen for four days, finally making a fairly good recovery after six weeks of extreme illness. Since this time, however, he has suffered constantly from a sense of constriction in his chest, dry cough and marked dyspnea. For a few months he was under observation in a local sanatorium until tuberculosis was ruled out. On examination he appeared to be in fairly good condition. The lungs showed diminished breath sounds with prolonged expiration throughout and a few sticky râles at both bases. X-ray examination, however, revealed a striking and characteristic picture of well-marked pneumonokoniosis with coarse granular mottling everywhere. On further questioning, this man stated that before he came to America twenty-six years ago he had worked for six years in a pottery plant in Russia where he had been exposed to sand dust. (See x-ray plate.)

CASE No. 2. J. C., a fifty-eight year old Russian Jew, had been a clothing presser in this country for thirty years. He was first seen June 23, 1919 for a postinfluenzal bronchitis following an acute attack six or seven weeks before. He was not seen again until July 5, 1934, being referred to us as a possible case of bronchiectasis. He stated that

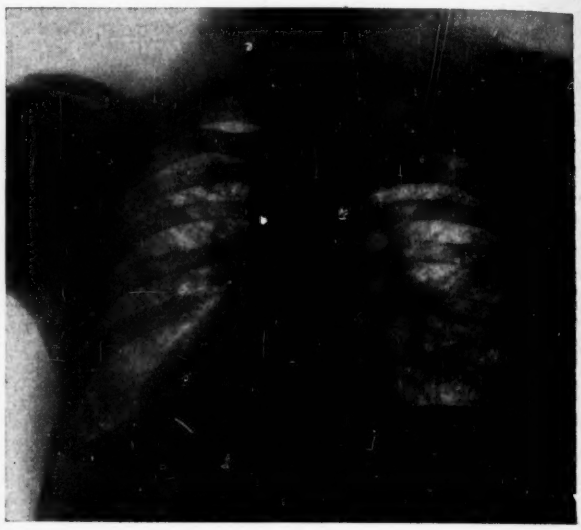

FIGURE 1. M. R.

ever since his influenza in 1919 he had had spasmodic attacks of cough which, however, had not interfered with his work until two years ago when he was seriously ill with pneumonia. Ever since then cough, shortness of breath and general weakness

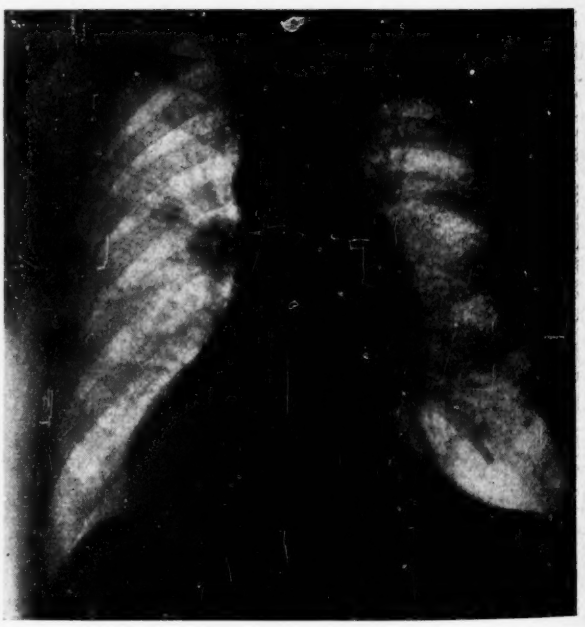

FIGURE 2. J. C.

were striking symptoms. The lungs showed markedly restricted respiratory movements, prolonged harsh wheezy inspiration and many sticky râles

over both bases. The x-ray showed fine mottling equally distributed over both lungs characteristic of the type of silicosis one so frequently sees in sand-blasters. Here again further questioning revealed that this man prior to his departure from Russia for this country thirty years ago, had worked in a pottery plant for fifteen years. (See x-ray plate.)

The striking similarities of these two cases are of course evident. Each had worked in a pottery plant exposed to silicon dust for ten to fifteen years some thirty years ago. Since then there had been no known exposure to any dangerous dust. In each case there had been no symptoms of silicosis so that this condition was never suspected until after an acute respiratory attack of comparatively recent date, influenza or pneumonia. In each case since this acute illness the characteristic symptoms of silicosis, shortness of breath and cough had been marked and the diagnosis itself made clear by x-ray examination.

Each of these cases therefore furnishes striking evidence of the effect of an acute respiratory tract infection in bringing into clinical activity a silicosis that had lain dormant and gone undetected for twenty-five to thirty years. We feel that they are well worthy of note.

THE PSYCHIATRIC HAZARDS OF MEDICAL PRACTICE

BY L. CODY MARSH, M.D.*

THE subject of industrial hazards ordinarily suggests only those that are physical. As a matter of fact, every industrial situation presents not only physical hazards, but those that are distinctly emotional, and therefore of interest to the field of psychiatry.

We physicians are entirely acquainted with the physical hazards of our profession, such as dangers from infection. But we have thought little of those stresses and hazards which are distinctly emotional. For the most part these stresses and hazards are fears of many kinds, many of which are specific to the practice of medicine.

In going over the editorial résumé of deaths among physicians found in the *Journal of the American Medical Association* from the years 1921 to 1933, one is struck by certain causes of death which suggest the need of a specific psychiatry for the medical profession. The causes of death loom largely and alarmingly in the heart and arterial mechanisms, and these deaths do not seem to be naturally in the higher decades of life. Physicians, in their consultation rooms, are constantly advising patients who exhibit symptoms of heart or arterial disease to lead lives less fraught with emotional stresses, the sense of hurry, and the constant driving of the psychomotor apparatus. And yet physicians themselves apparently seem unable to incorporate this sound doctrine into their own habits of labor and living.

But heart disease is not the only cause of death, in the mortality lists of physicians, which suggests the psychiatric hazards of medical practice. The striking number of deaths by suicide and deaths due to alcoholism and drug addiction are probably even more significant.

Perhaps we may partly understand these hazards by studying the types of men who are attracted to the practice of medicine as a vocation. Even a partial belief in the inferiority organ concept of Alfred Adler would convince one in looking over the first-year classes of medical schools that many men come to the study of medicine as a refuge from strong inferiority feelings. The premedical group in our universities is always entirely too large. It has become a university fashion to be among the "pre-meds" just as insecure college student types like to have it known that they belong to some fashionable fraternity or other social organization of smart standing. Thus it is that many freshmen medical students bring into the profession a sense of inferiority with a whole congerie of fear-thoughts as a basis of further development, due to the peculiar stresses of their chosen vocation. However, being a doctor does not cast out fear. It does not *per se* supplant insecurity with security.

It may not be beside the mark to inquire next if there may not be something in the particular psychology and genius of our medical school faculties which is due also to a sense of insecurity with its attendant fear-thoughts and which compensates by trying unconsciously to intimidate the student body. This is especially evident in the freshman year when anatomy constitutes a fearsome trial by fire by which a man's fitness to practice medicine is determined. In most medical schools, if a student cannot pass this gigantic feat of memory and application, it is decided that he is unfit to practice medicine and he is thrown out of the school. Because of this article of fear having been met with failure and because of the tremendous number of men seeking the comparatively few desks in medical schools, it is only with the greatest difficulty that the man who has failed in anatomy can find another school which will accept him. Even if he succeeds in passing anatomy in the particular way in which it is taught, the student gains a subconscious fearfulness about the whole process of medical education which is carried over into the remainder of his academic

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career and his professional life. One who has analyzed the personalities of even a small number of physicians becomes impressed with the bad mental hygiene unconsciously used in our medical school pedagogy, especially in the freshman year. The fears and insecurities so gained unconsciously dash themselves on the patients of the practice years, as waves dash upon rocks. Conversely the challenges presented by patients unconsciously touch off the fear firecrackers implanted in the school years as well as the previous home years. The patient and other professional situations oftentimes stand as a surrogate for the anatomy "prof" or some other fearsome pedagogical specter.

There is probably still much of the high school in the medical school pedagogical practice. Physicians whom I have analyzed have carried away the impression, to use their own language, that especially the first-year pedagogy did not exhibit the principles of good sportsmanship.

The next anxiety conditioning which the prospective physician suffers is that attendant upon the fifth medical year, or interne period. It is quite overwhelming to a young man's ambition to see here the surgeon who is collecting his first series of a thousand mastoid operations, another collecting his thousand of gastroenterostomies, and still others in their several fields collecting their thousands, and he wonders and wonders how anyone less than superman can ever find a place anywhere in medicine. Perhaps we have built up some rather false ideals as to what constitutes a successful physician. The ideals which we present, false or true, are the ones adopted by the young men studying under us and they are apparently of such a nature that they often condition them with fear rather than with courage.

The problem of mating has concerned the medical student throughout his apprenticeship, and as he contemplates being cast upon the professional world, he wonders if there is any chance of marriage this side of thirty. Of course our whole civilization is psychiatrically wrong in this instance because we tend, in nearly all walks of life, to push marriage, at least for the male, toward the thirtieth year. The flamboyant and exuberant period of adolescence must get over the septic sex period as best it may, leaving serious lesions on the several emotional organs, so that when marriage is feasible, one brings to it a considerable degree of psychosexual impotence, incapacity for marital enjoyment, when not downright sexual pathology. While it is not known precisely just how much marital morbidity there is in the medical profession as compared with other professions, one is at least very much impressed with the fact that there is much of it.

Medical ethics, while sound perhaps in principle and in ideal, for the most part, are a series of red "stop" signals, rather than a series of green and dynamic "go" signals. The psychiatrist, while believing that the profession should yield to none in the height of idealism in ethics, is on the whole convinced that our system of medical ethics, written and unwritten, as we have it, is loaded with bad mental hygiene. It is, like Puritanism, noble enough in conception and purpose but repressive in action and fraught with psychiatric perils. One wonders if the quack ever could have gained a considerable footing in America, if we had had dynamic and vital medical ethics, instead of the present code.

Fundamentalism is not confined to the field of religion. Prudery, pruriency, a feeling very similar to that of religious ordination, interesting psychological equivalents of a sense of divine mission, and strong reactionary trends born of insecurity are often noteworthy among physicians, especially so in their organized groups. Are we really any nobler, do we work any harder, do we suffer any more, or meet greater obstacles, than any other group?

When I have asked the eighty-one physicians in my series about their experience with medical societies, I have received some rather illuminating comments. One doctor said, "The Medical Society is where I put up and shut up." In short, there seems to have been a feeling among most of my eighty-one medical patients that, on the whole, the medical society was a mixed evil, unless one happened to be a member of the particular group in power. Indeed when one dispassionately studies the activities of medical societies, it is often questionable if they are dynamic, vital, and inspiring mechanisms, fully equipped to give a complete market for the talents of their membership. Here and there one sees an exceptional county society, sociologically as well as professionally awake, so that it is a real and telling force both for the community and for the physicians who are its members.

In this day of group combinations in restraint of trade, we find a similar tendency within the medical profession, especially in the great hospitals and foundations. They probably constitute a mixed good. For one thing their great size carries a wave and a wake which tends to draw into their machinery the weaker types (as well as the stronger) who become vassals of their organization. This makes for a loss of initiative, and the degradation of highly trained and educated persons to the status of clerks and hospital assistants. Many a physician has broken his heart, if not ruined his life, because, once so vassalized, he has felt powerless and afraid to free himself from the mammoth, of which he has become a parasite. We see the same situation more often in the great state hospitals, where one can have little independence or initiative, at least until he reaches a clinical directorship or a superintendency, when his

progressive spirit may be gone. Does this suggest psychiatric hazards for the profession which might be encountered with the realization of state medicine?

The writer has analyzed eighty-one physicians. It would serve no useful purpose to offer a tabulation of such a small number, as the boast may not be made of the first series of a thousand. However, these eighty-one cases represent dementia praecox, involutional melancholia, manic depressive states, psychoses with arterial diseases, psychoses with alcohol addiction and drugs, psychopathic personalities, general paresis, and many of the several psychoneuroses. There were scattering instances of obscure and rare conditions.

In the analyses of these personalities, here are some of the conditions which were brought out: unhappy family background; unfair treatment received in medical school, as an interne, or at the hands of the medical society; unhappy marital life; failure with a much desired love affair; psychosexual impotence; fear of financial failure; fear of criticism; fear of disgrace; fear of poverty; fear of being unloved; fear of lawsuits; worry over liaisons with female patients; worry over errors of judgment; loss of sleep; inability to organize duty program; addiction to drugs or alcohol; inability to play; lack of spiritual life and emotional outlets; lack of business ability; dabbling in the stock market; worry over professional secrets entrusted; unduly marked sympathy with others' ailments; insufficient preparation; and inability to study and concentrate.

Of all the bad mental hygiene elements uncovered in this modest series, it is found that there are certain situations which are outstanding as psychiatric hazards:

I. There is a tendency for the physician to *translate into his professional life the unhappiness and miseries of his personal life.*

II. Conversely, there is a tendency to *translate into the personal life the unhappiness of the professional life.*

III. *The memories of past failures.* We all have an accumulated store of these, and few of us have ever taken occasion to heal the still open and aching wounds. They condition us in both professional and personal contacts. In presenting the social soma, we present it as one lacerated, excoriated, and bruised, and with an attendant apprehension which prevents sunny, cheerful and frank participation in both professional and personal contacts. Much of the trauma and probably the most serious part of it dates back to the early formative years. These early wounds are constantly re-opened, if not re-infected, by the failures encountered in school, hospital, home, and office.

IV. *Insufficient preparation.* The high coefficient of neuroticism which obtains among moderns sets up a blocking against free, spontaneous, and happy study, so that even when we would do so, we find it arduously difficult. Attention and concentration are largely emotional mechanisms. It is doubtful if they are part of the machinery of what we have called the will. When the emotions are absorbed by inner and unresolved conflicts, they certainly are not available for attention, concentration and study.

V. *Love and sex life.* All physicians who have any appreciation of the psychiatric angle of their cases take pains to give advice to their patients regarding their love and sex life, and yet as a group, we are probably not too successful. There is still a large number of practitioners who make their professional activities part of their home life. This is rarely satisfactory and makes for conflict. Among other things it also conditions a physician to a certain home dependency, a home unweanedness, as it were.

VI. *Lack of a sense of success.* It is highly important for everyone in the working world to feel that he is succeeding, if only in a small measure. One must realize that one is getting somewhere, that one is respected, and that there is a promise of further success. Most of us have built a philosophy of success on the basis of some great outstanding single achievement, like a series of a thousand. As a matter of observation in the psychiatric field, we find that success is rather built upon one succeeding in the average little episodes and activities which make up everyday life. This begins with successfully getting up in the morning, a successful bowel movement, a successful shave, getting dressed, a successful breakfast, a successful beginning of the day's work as well as success in handling task situations of the day; success at the luncheon period, success in being able to quit work at the end of the day and to plan the enjoyment of dinner, and finally success for the toil or play of the evening, and success in getting into bed at night, with a resultant successful sleep. Upon such a foundation even a successful first series of a thousand may be reared.

VII. *Emotional and spiritual poverty.* It seems to be taken for granted that physicians are either agnostic or atheists. I have asked a great many physicians to give me an explanation of this. The reply has generally been to the effect that the study of science and practice of medicine exposes the humbuggery of religion, and therefore a physician cannot naturally be attracted to it. One suspects, however, that there are other reasons. One is that there is a natural antagonism between medicine and religion. However, in the present era there is probably more antagonism toward religion from the medical fraternity than from religion toward medicine. Possibly the physician is subcon-

sciously jealous of religion as a competing system of healing. Man must have emotional outlets. Doctors have all too few of them. They may hear the secrets and woes, both spiritual and physical, of their patients, but they themselves rarely have a confessor to whom they can unload their own accumulated burdens. Nor have they, ordinarily, sources of inspiration and comfort.

VIII. *The contagion of other's woes.* Very few physicians realize, when they are listening to the tales of physical pain and emotional misery poured out by their patients that there is a contagion to these things to which the physician is highly susceptible unless he has built up an immunity. Merely being "hardboiled" does not constitute a safe and effective immunity. We scarcely have a patient who does not mention something which opens one of our own incompletely healed emotional sores. Therefore to have the best possible mental hygiene in the practice of medicine and to avoid one of its most serious psychiatric industrial hazards, the physician should build up a happier technique of making himself immune to infection not only from actual communicable diseases in his patients, but to emotional morbidity which is probably even more communicable.

THE PREVENTION AND TREATMENT OF PSYCHIATRIC HAZARDS IN MEDICAL PRACTICE

The writer offers a group of emotional securities:

(1) *Security of Scholarship.* There is an emotional side to scholarship, first, the business of being emotionally sold on the value and pleasure of studious habits, and secondly, the emotional ability to clear away emotional interferences so that the entire man may place his striving at the studious level.

(2) *Social Security.* It would seem, from a psychiatric standpoint, that above all things a physician should be socially competent if not expert. This is an art, although it may be a gift. It involves not only so-called social graces and knowledge of society's manners, but a laboriously acquired skill in actual social usages, whether it is in small talk or manners of dress and approach. This also involves an emotional factor because most social failures are due to the dragging in of family prejudices and other unfavorable conditionings. Charm is merely a proof of good mental hygiene.

(3) *Economic Security.* Physicians are noteworthy for being poor business men. Probably one reason is that they have some sort of an emotional conditioning against good business practice, partly because they have had no training in it, and partly because so far they have succeeded very badly in the few attempts they have made.

(4) *Security of the Love and Sex Life.* Say what we will, the love-sex life is one of our most important emotional dynamos, if not the most important. When the love life is starved and the sex life is lived at a morbid angle, security cannot be enjoyed in these realms with a psychosexual potency, in the widest meaning of that term. If one is willing to clear the emotional pathways of adverse conditionings, it not only means fullness and happiness in the love life, but a release for power in all directions.

(5) *Security of Purpose.* I have not found among those whom I have questioned a very clear conception of what they were driving at professionally. One must make a distinction between a fancied purpose, which has not been carefully examined as to its real value, much less as to its fitness for the individual holding it, and a purpose real and appropriate. Every physician would do well to know precisely for what he is striving and to be able to record progress frequently, if only a moiety.

(6) *Emotional and Spiritual Security.* This is related to all of the others. To have emotional security one must have freedom in these realms, and to be free one cannot be bound by the past punishments, bitternesses, failures, and disappointments. Emotional and spiritual freedom also includes a freedom of association of ideas without which there cannot be any certain professional progress.

(7) *Health Security.* Physicians as a group take remarkably little interest in their own health.

(8) *Domestic Security.* This refers both to security in the physician's family background, as well as the family which he has established by his own marriage. He must feel that he is loved, cared for, and respected by both of these groups, if he is to be given the best possible buoyancy and power for his own endeavors. A doctor should know the technique of being lovable or likable as he may already know the technique of medical procedures.

The physician should ever be careful to bring into his consultation room a clean emotional slate, instead of one disfigured by the unpleasant scene at the breakfast table, for example, and other unhappy situations. By the same token, a physician entering upon his personal life, as he leaves the professional phase, should go through the conscious process of cleaning the emotional slate of any unpleasantness encountered in the office and at the bedside, so that he may present to his extra-professional scene an emotional slate not disfigured but clean and ready to receive the happier impressions.

(9) *Professional Security.* This one is intricate and involves many factors in this day of complex organization and procedure. It means that the doctor must feel secure in the fact that he is respected by his colleagues, generally, that he has an honorable place in his medical society, that his researches command attention, that his judgments in dealing with patients are accepted because they are sound, that

his diagnoses and therapeutic procedures are correct, that he is still thought of with esteem in his medical school, that he is comparatively safe from disastrous litigation for malpractice, to mention but a few of the professional rocks on which he must feel a secure footing.

(10) *Security of Individuality.* This is highly important in an age when individuals tend to be swallowed up in the mechanical maw of great and ponderous institutions. It is a bad thing for the race when educated and professional people, especially, cannot maintain the integrity of their own individualities and personalities, which in turn means the retention of their personal vanity and self-respect. One must believe that one counts one. This is apt to result when the other nine securities are reasonably near their par value.

RECOMMENDATIONS

1. Medical schools should examine the mental hygiene coefficient of their pedagogical procedures, so that medical students regard their schools more as inspirational and dynamic sources of education rather than as fearful taskmasters.

2. It is urged that medical schools give courses in mental hygiene, particularly as needed in the practice of medicine. There should be a psychiatric examination of pre-medical and medical students and provision made for the correction of unsatisfactory emotional states. Students should also be taught the art of study as needed in a graduate school, so that they may feel a sense of happiness and satisfaction in their intellectual tasks, and establish at the outset habits of independent investigation. It is doubtful if even our graduate schools wean very many students from the status of being scholastic nurslings.

3. Medical schools should insist upon sports and recreation for each student.

4. During the fifth or interne year, some provision should be made for practical and efficient teaching of office practice, organization, accounts, and other business aspects of medical practice. This course might well include also practical instruction in the aesthetics as well as the sociological side of medicine. One of the great causes of failure among us is social inexpertness. Also during the interne year the very ablest assistance should be given in helping the young doctor map out his career.

5. Medical societies should have the courage to examine their philosophy of organization and procedure and to appraise the mental hygiene of the organization toward members. The Medical Society should be a modern, forceful and dynamic clearance house of power. The writer has seen many instances where the County Medical Society closely resembled a respectable fundamentalist ministers' association, repressive, insistent upon the faith, and torn asunder with petty cliques and other havens of the small and narrow mind.

6. It is urged that medical ethics be rewritten and more in the spirit of the modern age. As it is, they seem to contain in practice an element which tends more to sterilize the fit than to repress the unfit.

7. It is suggested that either the alumni associations with the help of the medical school, or the county medical societies, provide energetic and telling assistance for ambitious physicians in aiding them to realize worthwhile aims of practice, research, publication and other accomplishments.

8. It is finally urged that physicians make it their business to provide for themselves emotional and spiritual values and outlets, as well as inlets of inspiration and courage for their arduous tasks. In this connection, it would be well for every physician who feels the stress of his chosen vocation to find some satisfactory psychological confessor who can provide not only a safety valve but also the comfort of disinterested guidance. The thesis that each man must stand on his own feet is bad psychiatry and is not entirely true. Man is a social animal and he stands only because others stand around and with him.

9. Physicians would do well, regardless of their specialty, to become familiar with the best of mental hygiene literature and apply it not only to themselves and their personal lives, but in their professional and technical activities.

MASSACHUSETTS CONFERENCE OF SOCIAL WORK

WHAT IS AN ADEQUATE HEALTH PROGRAM?*

BY IRA V. HISCOCK, C.P.H.†

FOR the purpose of this morning's discussion, it seems appropriate to consider an adequate health program in a broad sense, bearing in mind the fact that conditions vary in different sections of the country and also that we are living in a changing world. The extent of medical and public health care considered necessary for a given community or group depends on such varying factors as the physical condition of the people and the changing science and art of medicine. Varied and complex problems arising with the significant developments of this century emphasize the need of: (1) a greater realization of the interdependence of the factors of our social

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†Hiscock, Ira V.—Professor of Public Health, Yale School of Medicine. For record and address of author see "This Week's Issue," page 1168.

structure; (2) a higher degree of coördination among the parts of our huge social system; and (3) a proper balance among the factors of change.

With these conditions in mind, an adequate health program may be considered as one which is so carefully organized, so fully coördinated with related activities, and so effectively maintained that the best attainable hygienic supervision and professional care may be obtained by each individual under economic conditions which make utilization practical. This important business of dealing with human life relates to every man, woman and child in the community. The scope of the program is embraced by the definition of public health, as that which develops and conserves health and lengthens life by means of community activities organized to secure environmental sanitation, communicable disease control, early discovery and preventive treatment of disease, and the education of the public in the principles of healthy living. Such provision includes the work of official and non-official health agencies, private physicians and dentists, hospitals and clinics, in a comprehensive, carefully planned and correlated program in which a health council or a community council may play an important rôle. In rural areas, local committees including Red Cross societies have rendered valuable service.

The basis of satisfactory public health work in a community is a well-organized health department, adequately financed and staffed with trained personnel, and supported by the medical profession, suitable laws and ordinances, and favorable public opinion. Of great importance is an understanding of the responsibilities of the citizens for adequate health service and the support of the medical and dental professions as well as of lay citizens. The public health program aims to carry out the responsibilities in disease control imposed by law, to supplement the services of the private physicians, and to stimulate a public demand for preventive health services.

There is a chain of influences which begins at the hospital and extends out of the individual home. The first of these is the out-patient department; the second is the major health center (such as is found in Boston, Honolulu, New York, Los Angeles County), and including a series of clinics dealing chiefly with prevention, but involving out-patient treatment of tuberculosis, syphilis, gonorrhea, and dental defects; the third is the minor health center dealing with well persons (child health conferences); and the fourth is the public health nursing staff, which carries the health message into the individual home. While hospital and institutional care of illness is carried out under specialized services, the health center and home services can best and most economically be conducted on a generalized district plan, the out-patient service forming the point of transition from the specialized to the generalized scheme. The private physician may be a key person in the modern preventive medicine program and this relationship should be fostered.

The provision of adequate preventive services would presumably modify the expectancy of diseases and so reduce the need for diagnosis and treatment. Present quantitative and qualitative standards are based on existing conditions, although we realize that they should be flexible to provide for change. Some immediate reduction in the need for diagnosis and treatment would result from the more general application of well-known and tried preventive techniques to all the people. So far as the technical powers of medicine are concerned, diphtheria and smallpox might quickly be reduced to negligible factors in the total need for therapeutic medicine. But as Dr. Roger I. Lee* has pointed out, against this might be an increase resulting through periodic health examinations from the discovery of hitherto unsuspected conditions requiring medical service.

Where prevention depends largely upon the control of environment, as in malaria, a gradual improvement is to be anticipated. Other diseases such as tuberculosis, pellagra, and rickets, to the extent that they are influenced by poor economic and social conditions, are beyond the power of medicine alone to control completely. The need for service arising from the incidence of these diseases will doubtless be reduced by better preventive medical services, but it is likely to remain large until problems of poverty and congested living have been more completely solved. The nervous and mental diseases suggest a possibility of a large future increase in need for medical care.

There is little immediate prospect of controlling certain acute respiratory infections, such as the common cold and influenza which are widely distributed. The problem of the so-called degenerative diseases, for which no specific preventive measures have been developed, remains heavy. The best hope of combating them appears to lie in the periodic health examination and follow-up, facilitating early diagnosis and prompt treatment. Many of these chronic conditions are sequelae of acute communicable diseases. It is probable that prevention of acute disorders and adequate convalescent care of such cases as occur will eventually reduce the incidence of such diseases as nephritis and organic heart disease. The Massachusetts Department of Health is making the outstanding contribution to the problems of adult hygiene among the public health organizations.

*Lee, Roger I. (Senior Author, Univ. of Chicago Press): Fundamentals of good medical care. Publ. No. 22, Committee on the Costs of Medical Care.

As a result of extensive studies since 1920, the Committee on Administrative Practice of the American Public Health Association has developed certain so-called standards which are used in survey work and are useful guideposts.* The Appraisal Forms for City and Rural Health Work contain measures of service, largely quantitative, by which a community may determine the adequacy of service in comparison with modern practices. Among the suggested personnel standards which have stood the test of years may be noted the emphasis given to the need of a full-time, trained health officer for each health unit (city, county or state), and of one public health nurse for approximately each 2,000 of population. Dr. Haven Emerson has estimated that there is needed one hospital social worker for each 200 out-patient department cases, but it should be noted that these cases represent a selected group of persons with social problems. The National Tuberculosis Association emphasizes the need of a ratio of at least one bed in a tuberculosis institution for each annual death from tuberculosis, and with the increased activity in work with children, some feel that two beds are not beyond a desirable standard. In rural areas, 100 to 200 beds per 100,000 population are suggested for general hospitals, with from 400 to 600 for the same unit of population in urban areas. The goal of seventy-five beds per 100,000 population for convalescent cases and of 200 beds for chronic cases has been reached in only a relatively few places.

The American Public Health Association has also prepared an outline of desirable standard minimum functions and suitable organization of health activities. It is indicated that an annual appropriation for official health work totalling at least $1.00 per capita of population served should be provided for the minimum community activities described and exclusive of hospital services, and that trained personnel of proved competence should be assured for medical, nursing, sanitary, laboratory, and statistical activities. The Association has recorded through committees that a total budget, from official and private sources combined, for a reasonably adequate community health program requires an annual budget of $2.00 to $2.50 per capita. Of course it is not sufficient to meet alone quantitative standards of budget, bed capacity, or service, for qualitative factors are equally significant.

To return to the three elements of an adequate program mentioned at the outset, successful organization can naturally be developed only on the basis of comprehensive studies of local problems and opportunities. While there are fundamental principles which are somewhat generally accepted, a flexible attitude toward adaptations to local situations is desirable. Coordination or integration of the health program with other activities is essential in view of the inter-relationship of health and social machinery. Much of social work has to do with health, while a great deal of public health work has a direct bearing on welfare problems. Naturally a reasonably adequate health program affects directly and favorably the activities of trained social service administration and vice versa. In addition to the essentials of direct health service which have been discussed, maximum results in the prevention of preventable disease can only be obtained when individual families of the community are assured an income adequate for the provision of basic minima in the form of food, shelter and clothing. Effective program maintenance depends upon the understanding and support of the public.

Finally, an adequate health program should be viewed in the light of a nation-wide situation. In view of gradual progress in health work for many years, it was surprising to observe the serious curtailment of health conservation facilities at a time when they were most needed. The depression added physical, moral, and mental suffering to underprivileged people during these years. Inadequate food, clothing, and housing have affected these people in many ways, and the effect on health will be felt for years to come. Favorable mortality reports are somewhat confusing unless one looks deeper into the experiences of families and of districts with respect to illness and health conditions. Unquestionably our relief organizations, ably directed, helped to ward off the most acute effects which would have been expected to follow widespread unemployment and destitution. Some groups of the population doubtless benefited by elimination of overwork and overindulgence. But careful studies have shown excessive illness in depression families coupled with increased birth rates and abortions. These problems, together with others arising from reduced health programs, must be met and met soon.

A strong national health program, integrated with the state and local health organizations, is essential*. Correlated with the provisions for a local health program there are needed well-rounded state departments of health and a strong, coördinated federal health service equipped to provide leadership, stimulus, and assistance to the end that sound international relationships may be provided, that unnecessary disease may be prevented and that public health may be conserved. Training in the medical and biological sciences and understanding of the fields of economics and social sciences are essential for effective results. Studies are needed of methods for extending scientific information already available and for securing the more general application of present knowledge.

*Community Health Organization, Ira V. Hiscock, editor, Commonwealth Fund, New York, 1932.

*Hiscock, Ira V.: Rehabilitation of health work in the United States. Yale J. Biol. & Med. 6:609 (July) 1934.

HEALTH RESOURCES IN SOUTHERN BERKSHIRE*

BY MARION C. WOODBURY, R.N.†

I HAVE the impression that many people in this audience may not be familiar with the program of public health work in the southwestern corner of Massachusetts known as the Southern Berkshire District. The area consists of sixteen towns south of Pittsfield, varying in population from 60 to 5800 and a total population of 21,451. It has an assessed valuation of about thirty-five million dollars which is ample to afford the financial support of a modern health department according to American Public Health Association standards. The trend of intelligence level is considered on the whole better than average, though very low in sections. There is, among the leaders of several communities, a developing consciousness of the advantages and opportunities of a Health District. These facts, added to the report of the last annual survey appraisal made according to A. P. H. A. recommendations, make it seem perfectly possible to have a very satisfactory legal Health District, the services of which, together with the hospitals, visiting nurse associations, the county social agencies and possibly a local case worker, ought to make Southern Berkshire a very desirable community in which to live.

Briefly, then, may I attempt to show what health resources are at present provided, and what other developments we feel are indicated in order to carry out a satisfactory health program closely in accord with Professor Hiscock's recommendations which you have just heard.

I have chosen to classify the health resources for this area into Medical, Hospital and Public Health (official and non-official) and other agencies of a social service nature.

The medical resources, as would be expected, are not equally distributed, for while there are seventeen resident physicians, and as many and more available from neighboring towns and cities, nevertheless it is often difficult to locate a physician within a reasonable time and at a satisfactory price, because of distances. There are seven towns without a resident physician, and the distance from a doctor varying from three to eighteen miles. The charges for house calls at these distances are usually based on mileage, and $20 or even $10 for one house call is quite impossible for most of the population in the remote sections. Three towns have met this problem to a certain extent in that they vote a subsidy to a resident physician and he in turn makes a flat charge of two or three dollars for a house call to any part of the town; maternity cases and night calls at proportionate rates. But there are still seven towns without a doctor. Three of these have the enviable record of having no one on the welfare list. They are small, not wealthy places, but the people seem to have pride, and work hard to support themselves. A habit some of the rural families have is to telephone to their family doctor about their apparently simple symptoms and ask him to send medicine by mail. When the doctor knows his patient very well, he will prescribe in this manner and may charge for the telephone call and medicine mailed out. More often, however, telephoned information and advice is not charged for as such. The doctor's willingness to do this service adds to his standing as the real Family Doctor. The human elements of personalities and freedom of choice enter into the "physician situation" for often people will prefer to pay ten dollars for a certain doctor than to call the local one whose charge is two dollars. In spite of the fact that these rates are high, there are comparatively few situations where people have not had medical aid for illness because of financial reasons. People suffer as much from their own stubbornness in refusing to follow the doctor's orders as they do from lack of attention. The employment of the physician in the promotion of health is quite another thing.

An additional factor in this more or less favorable situation is the public health nursing service which is available in every town at present, with the aid from outside sources. Often the doctor calls upon the nurse to supplement his work and thus reduce the cost to the family. This service will be described later.

The hospital resources likewise present an interesting picture. There is only one hospital within the boundaries of the district—a fifty bed capacity with a low daily average bed occupancy, twelve, I believe. There are, however, three hospitals in Pittsfield, and one each in Winsted and Canaan, Conn., which are also patronized by the people of this area. The rates are comparable, ranging from $3 to $10 per day. It is interesting to note that 54 per cent of all births (live and still) to resident mothers of this area occurred in these hospitals last year. There are very few beds so endowed that people may be taken care of free of charge, but in one hospital there are at least twelve weeks of free care available to people of four of these towns when referred by the donor or his family. The expenses of several cases have been guaranteed by the towns this past year and the person put on the welfare list temporarily. Two towns make appropriations at Town Meeting to be paid to the hospital to be applied to the care of indigents who are not receiving town aid but who are designated by the Selectmen as unable to

*Massachusetts Conference of Social Work, Wellesley, September 15, 1934.

†Woodbury, Marion C.—Director of Nursing Service, Southern Berkshire Union Health District. For record and address of author see "This Week's Issue," page 1168.

meet the emergency expense of hospitalization. There is an inability to meet these large emergency costs on the part of many, especially where taxes have to be met by working on the roads because of little cash. The people of these towns are not very clinic-minded, perhaps because of the absence of conveniently located clinics and because the physicians as general practitioners have taken the responsibility for the care of the needy (worthy and otherwise). Then too, I believe that there is or has been a healthy pride in family responsibility for family needs. There are specialist clinics such as eye, ear, nose and throat; orthopedic; cancer (State directed) and G. U. (State subsidized) all of which have been attended by ninety-seven people from this district so far this year. The Tuberculosis Consultation clinics are under the direction of the Health District and the State Sanatorium, held at the hospital in the district (Fairview Hospital in Great Barrington). This is the second year of this clinic and the opportunity is valued by the doctors. One hundred and four patients have been sent in this year. We also have the consultation privilege extended by the Riggs Foundation Child Guidance Clinic.

Not all physical conditions needing medical care are attended to, of course, but more than half of the defects noted at pre-school examination by family doctor or conference doctor, were attended to this summer. Not all of the others were neglected for economic reasons. A good deal of inertia and stubbornness enter into the picture.

In order to meet this problem of neglect to provide care when needed and to prevent the necessity of corrective work, we have an interesting Union Health District in process of development. Twenty-six years ago the first Visiting Nurse Association was organized in this district and since that time five others have been added. Within the last four years an experiment in an official Union Health District, and several nursing committees in towns without a V. N. A. have been developed.

The Health District, at first a group of sixteen towns organized early in 1931 into a voluntary organization for experimental development with the State Department of Health and the Commonwealth Fund of New York City assisting, has now changed to a legal union organized by vote of seven of the sixteen towns originally interested, anticipating that the others will vote to join. Without the generous assistance, financial and otherwise, of the Commonwealth Fund, this experiment could never have been undertaken. This is not the place to enter into any details of the organization but suffice it to say that the Health District and three affiliated Visiting Nurse Associations are working in closest coöperation. The Medical Director of the District is General Director, and the Director of Nursing for the District is also Nursing Director of the three Visiting Nurse Associations, and the complete generalized public health nursing service is thus standardized and supervised in thirteen towns with the exception of school nursing in two of them. These exceptions closely coöperate.

The program of public health nursing is especially concerned with the problem of extensive dissemination of true and convincing information on the promotion of health and the prevention of disease, in such manner that such information will be put into action. One of our fundamental principles is to help people help themselves. We do not try to see how we can do things for them, but how we can help them decide and actually do what is considered best, at least for the health of the children. Very often we have been tempted to plan and provide transportation to a clinic, for instance, but if the people are convinced of the value of the Tuberculosis Consultation Clinic from what they understand from our explanation in conjunction with their doctor's advice, they can be depended upon to find a way to get to the chest clinic.

Likewise, in practically every town parents attend to the compulsory vaccination against smallpox, and now more and more are having their children immunized against diphtheria as a private matter. I think that we can safely prophesy that when it becomes general practice to give the one dose toxoid, people will attend to the matter early—but not without convincing information from the physician and probably the nurse.

Nursing service for the expectant mother and the mother in labor is available. Last year, of the 46 per cent delivered at home, one-half had bedside nursing care from public health trained nurses, and at least 39 per cent had had prenatal nursing supervision. A complete generalized nursing service including this maternity nursing, health supervision of infant, preschool and school child, tuberculosis and communicable disease nursing—and bedside nursing for acutely ill and industrial nursing is available to anyone in this area. In the past voluntary associations have been carrying the public health nursing, but with the development of the legal union and because of the close affiliation between this union and the visiting nurse associations, public health is becoming a public responsibility and all possible duplication is being avoided.

The personnel of the District and affiliated V.N.A.'s consists of Medical Director, Nursing Director, six nurses under supervision, a Dental Hygienist and two Milk-Sanitary Inspectors and clerk, and six nurses coöperating but not affiliated.

We look to the following county social agencies for consultation on social problems—

S.P.C.C., N.E.H., Red Cross, and Riggs Foundation. We also have consultation service from the Social Service Department of the Department of Public Health. The agents of these services are very busy and we cannot ask them to help us except in the most flagrant cases. Very often we are the only confidantes of a mother about her daughter's or her own problems and we dare not be too free with our queries or suggestions. The nurse welcomes the opportunity for consultation about these questions as well as regarding her own adjustments and we would wish for a case worker consultant of a very particular type—superhuman no doubt—as we are expecting public health nurses to be almost that.

It follows that, at present, the provision of health resources in this area is approaching adequacy.

(1) Medical services are generally available because certain towns subsidize a physician and physicians are very charitable.

(2) Hospital services are generally available because certain towns make appropriations for support and because of private contributions to supplement fees.

(3) Organized health department services are available because of formation of the legal health district, at present supported by local taxes, state subsidy, and contribution from Commonwealth Fund—later to be by local taxes and state subsidy.

(4) Nursing services are generally available because of town appropriations and contributions from local people, the Commonwealth Fund supplementing fees for services.

In conclusion, this rural district has in the privilege of the Health District experiment an opportunity to develop a remarkable coöperative service, so carefully organized and distributed that it will be practical and will be an integral part of the activities of this larger community. The success of this is dependent upon services rendered and the interested and informed public opinion and public consciousness of the Health Department activities and their value to community life.

THE STATE INFIRMARY*

BY FLORA E. BURTON, A.B.†

THE State Infirmary is your Infirmary, entirely supported by your taxes and as such should be included as a valuable health resource in any health program for Massachusetts. It is always an indicator of social conditions as well as health conditions of the community. When business is good the population is low and when unemployment is rife it is crowded to the doors—a daily census of 3059 in 1933. It felt the pressure of hard times before the whole community felt it in 1929, as so many of our people come from the ranks of unskilled labor with low wages, who are the first to need help.

The Infirmary is not an almshouse. It is a great general hospital which always has one more bed available. Last year, of the 6443 patients treated, only 452 came with no disease but in need of shelter. As the majority of patients come to the Infirmary only as a last resource, the type of health resource lacking in our cities and towns is clearly evident. The greatest number of admissions is of the chronic sick, which includes heart disease, arthritis, in all forms, arteriosclerosis among the older people, diabetes, tuberculosis, cancer, diseases of the digestive system, resulting from bad teeth, worse teeth, and no teeth! (The ERA is evidently aware of the need of dental care in this State and is going to do something about it.) Some years ago, Dr. Lombard, in his most comprehensive survey of the State and Dr. Haven Emerson's survey in Boston, showed conclusively the great need of planning for the chronic sick. Dr. Lombard estimated that nearly half a million of the total four million in this State are ill with chronic disease. Sixty-nine per cent of these people come from the homes of the poor, which explains why so many become chronically ill, because the poor never can afford to have proper medical care in the early stages of their illnesses. Outside the homes, there are very limited resources for the care of the chronic sick, other than the State Infirmary, the Boston Infirmary and two or three private institutions. Some are cared for in the private commercial nursing homes which are dreary places, on the whole, expensive and without health inspection.

In 1933 there were only thirty-nine admissions for the treatment of diabetes. This must mean that health resources are available for the diabetic and in some way insulin is being provided so that this particular group is receiving better care in the community than some of the others. Among the heart patients, the young men are without any resources in the State except when they need acute hospital care. The House of the Good Samaritan in Boston provides for a few young women. It is pitiable to see so many young people come to the Infirmary with arthritis and diseases of the spinal cord and nervous system. They have

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been to private doctors and hospitals until they have no more money and finally reach the Infirmary as a last resort. There is also the stray case, but no less important, of the psychotic child and the child with postencephalitis. The doctors have done their best, the family has tried, the social workers have spent hours trying to adjust these children. They are never understood and suffer accordingly. They are impossible for the home and impossible for the hospital, yet they must be cared for and there seems to be no place except the mental hospitals and the adult hospital ward at Tewksbury. There are two such children at the State Infirmary now. It would seem that with all the money which is spent for the care of children, some ward in some hospital might be developed for these pathetic cases, where they might be studied and constructively treated.

Because the cancer hospital at Pondville has filled so successfully a great need in our health program, isn't it possible, regardless of hard times, to do something equally human for the chronic sick? Are we going to do nothing with the findings of those excellent surveys? If we could only get these patients earlier and save them from becoming chronics and incurables;—think of the economic loss to the family, frequently the breaking up of the family, the individual's mental suffering and unhappiness. Surely, we must include chronic illness in any health program.

There are other groups which come for care. The crippled, some without eyes, more without teeth, some without legs and in many dismembered ways. The hospitals thought it was sufficiently worth while to remove the leg, but not sufficiently worth while to give a new leg. Artificial legs cost money—the patient cannot afford it—social and welfare agencies may have been asked but demurred—finally the patient may prefer to panhandle on the streets—hence to Tewksbury or to jail. If he had been given an artificial leg at the proper time as a part of treatment, would it not have helped to keep up his morale, encouraged him to overcome his handicap and thus add to his usefulness and happiness? This of course brings up the much debated question of who shall supply apparatus as a part of treatment and health, the hospitals or the relief agencies.

Another group of patients, 542 in 1933, are those suffering from syphilis or gonorrhea. The great majority did not need hospitalization but due to no work and no money they had to live while receiving treatment so came to the State Infirmary. They have stayed longer than necessary because of no possibilities for work when discharged. Treatment for these diseases is not so free and plentiful as is necessary. Consequently patients do not get adequate follow-up treatment. The small cities and towns have no resources, the small local hospitals still refuse bed care and unless one has money one cannot go to a private doctor or pay for transportation to the nearest Board of Health Clinic.

These are some of the problems which present themselves at the State Infirmary. It is a general hospital. The query often comes up as to whether we are using this great institution for the good health of the greatest number. Should our people suffer and drag along without much needed operations or treatment because the local community or Public Welfare Board is too niggardly to provide local hospital care, when there is a free bed, or $7.00 a week for a settled case, at the Infirmary? Are we filling the Infirmary too much with chronics or should we give more general service in these days when it is so hard for people to pay for health service and when health is more vital to the individual than ever before?

CONVALESCENTS IN HEALTH UNITS*

BY LUCY A. TURNER†

DR. Hiscock has spoken of the need of some provision for convalescents in even a small health unit.

There is a close tie in the social condition of a family with the presence in it of half-sick persons, either adults or children, who are recovering from severe illnesses and are not able to carry the full burden of their family.

It is true that neither public nor private hospitals should be asked to care for these persons, but some plan by which they could realize the benefits of the previous hospitalization would be an enormous help to them and to the community in which they live.

To a certain extent private-child-placing agencies are able to take convalescent children. The Children's Mission to Children specializes in this service and the other child-placing agencies are attempting to do a similar service. Around Boston there are moderately priced convalescent homes, but I know of little service throughout the State available for adults, who are convalescing from severe illnesses or mental breakdowns and are returned to their families.

Has the gallant work with children suffering from damaged hearts which is done at The House of the Good Samaritan in Boston been sufficiently advertised to make us realize that more hospitals are necessary for such children?

The crushing experience which we have just been through with a little eight year old girl,

*Massachusetts Conference of Social Work, Wellesley, September 15, 1934.

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who has been three months on the waiting list of this hospital and cannot yet be admitted, has given us something to think about. For fifteen weeks this child was a free patient in a private hospital. She was then recommended by the Social Service Department for placement. In spite of a very carefully chosen foster home she began nose hemorrhages again and was returned to the hospital, which then felt it could not readmit her after having given free service for so long. She returned to her own home, which was nearer the Out-Patient Department of the hospital than her foster home had been, in order that the hospital could give emergency help about her nose-bleeds. Three times in two days this child was wheeled in a baby carriage by her father back and forth to that hospital. Finally, after a serious hemorrhage occurring on the street, she was taken to the City Hospital as an emergency. She is again ready for placement. In the controlled condition of a hospital she does not have nose-bleeds and her heart can make real progress, but, without such a hospital, foster home care is most inadequate.

She will eventually get into the Good Samaritan Hospital and the private agency will gladly contribute toward her support there, but there are many other children who need a similar service.

Is this the place to beg for help for postencephalitic children? Doubtless you have had the situation put to you by earnest, bewildered, often well-educated parents, who ask what to do and where to turn for protection and possible treatment for these extremely pathetic children. The social loss of allowing them to get into mischief, endangering the lives of normal persons through uncontrolled acts, such as releasing brakes on cars, torturing little brothers and sisters, et cetera, is a fast-growing problem.

With two desperate cases this summer I appealed to Child Guidance Clinics, Little Wanderers Home, public and private doctors for advice, only to be told that until the State had a special hospital for them these postencephalitis cases must be allowed to remain in the community.

If propaganda is needed to obtain a hospital, why not start it? Child Guidance Clinics and child-welfare agencies are fully aware of the need for help and research on this problem.

We have patients who need the help and who might offer material for further light on this dread disease.

Throughout the County children are examined by school doctors and notices sent to parents urging tonsillectomies. In Boston this may be a simple matter, for you have large clinics which offer assistance, but how about the towns of Douglas, Northbridge, South Barre and similar outlying districts?

Free service is unobtainable and the point of discovering the need by the school doctors is somewhat lost. The City Hospital in Worcester takes thirty children a week during the warm months of the year, but they take only children belonging to the City of Worcester. The Out-Patient Department of the Worcester private hospital will take twelve children a week. They may come from either the City or County. In examining seven hundred children before sending a part of them to fresh air camps this summer, enlarged or diseased tonsils were noted in twelve per cent.

The condition of children's teeth in county towns is frequently appalling. Schools preach clean teeth and the toothbrush business should be obliged to spend very little for advertising with the free service they get from toothbrush drills and gold stars for clean teeth; but necessary dentistry at a low price is seldom available.

I think I am correct in saying that there is practically no service for adults. Our sympathies were greatly aroused over a man and his wife, who both had had their teeth extracted at an Out-Patient Department over a year ago, but for whom no provision for false teeth had ever been suggested. Without a tooth between them, and unemployed, is it any wonder that they were irritable at being questioned about the care they were providing for their children from the food order sent by the City? Teeth were finally obtained for the mother, but, so far as I know, her husband is still toothless. Even when free dentistry is available it often means free extraction which is a permanent handicap to a child later. There are certain teeth, the loss of which will exclude an otherwise suitable boy from enlisting in the Army or Navy. Not long ago a most attractive, intelligent young girl came into our care, who had been without one of her front teeth for some years. Deeply conscious of her appearance she had become a serious conduct problem. Many of her difficulties disappeared with the restoration of her self-respect by proper dentistry.

In these days of Federal assistance could the dentists cry depression loudly enough for Roosevelt to hear them and allow our unemployed to utilize their services to the great benefit of both dentists and patients?

A little over two years ago under the auspices of a private fund a survey was made of the incidence of defective hearing in the school children in southern Worcester County. An examiner was provided and a machine for testing. Information about a child's hearing was given to the child's parents with information as to where an aurist could be found, and a clinic for further diagnosis of children was established through the Out-Patient Department of the Memorial Hospital in Worcester. This clinic

was wholly diagnostic and the parents were told where and how to obtain medical attention for their children and urged to take advantage of the special education which their children needed.

The discovery of these children was not difficult. To get them to a clinic for further diagnosis was partly successful, but it would take a great deal of education and publicity to be sure that they obtained the treatment and utilized the educational advantages needed to help them adjust themselves to the life of a deafened person.

I suppose it all comes down to a better informed public. It is not enough to tell a community once or twice of services available. State Public Health workers must talk continually to parents and to the local Public Health officials of the need of following up treatment after diagnosis, even for such little things as diseased tonsils, teeth and posture. Some provision should be made for even the poorest and the most distant to have access to this treatment.

How would it be to have a division of Federal Aid called FUHA or Follow-Up Health Administration? I think that it could be a very useful administration. That combination of letters has not been used before although I understand there are two groups of CCC's—Civilian Conservation Corps and the Commodity Credit Corporation and that the situation is fraught with great danger. As I understand it, one man wrote to Washington addressing his letter to the CCC and received from the Commodity Credit Corporation ten thousand dollars by return mail. That was not so bad because it was in line with the redistribution of wealth, but how about the other man who wrote the Commodity Credit Corporation asking to borrow money and woke up to find himself cutting down trees?

I do not know that we need more diagnostic service, but more detailed follow-up in small towns would certainly be valuable and might serve to prevent some persons from going to the State Infirmary later.

RÉSUMÉ OF COMMUNICABLE DISEASES IN MASSACHUSETTS FOR NOVEMBER, 1934*

In November, 1930, we had five times as much diphtheria reported as for the past month.

Every indication shows that typhoid fever will fall below one hundred and fifty cases for the year, less than one-half the 1930 incidence.

Lobar pneumonia and bronchopneumonia deaths show nothing remarkable to date.

Measles is running low for the State with increased prevalence in Fall River, Middleboro, Wareham, Holyoke, and Springfield.

Scarlet fever was reported in the lowest figure since 1918.

Pulmonary tuberculosis had its lowest reported November incidence.

Whooping cough and chicken pox show a slightly increased prevalence, while German measles had its highest reported morbidity since 1917.

Epidemic cerebrospinal meningitis, infantile paralysis, tuberculosis other forms, and mumps show nothing remarkable.

RARE DISEASES

Anterior poliomyelitis was reported from Boston, 1; Foxboro, 1; Methuen, 1; New Bedford, 2; Southbridge, 2; total, 7.

Dysentery (amebic) was reported from Agawam, 1; Boston, 1; total, 2.

Dysentery (bacillary) was reported from Boston, 1; Northampton, 6; Quincy, 1; Somerville, 1; total, 9.

Encephalitis lethargica was reported from Brockton, 1; Dighton, 1; Marlboro, 1; total, 3.

Malaria was reported from Belmont, 1; Boston, 4; Foxboro, 2; total, 7.

Cerebrospinal meningitis was reported from Fall River, 2.

Septic sore throat was reported from Boston, 5; Lowell, 1; Northampton, 1; Quincy, 1; Scituate, 1; total, 9.

Trachoma was reported from Boston, 1; Haverhill, 1; total, 2.

Trichinosis was reported from Arlington, 1; Boston, 11; Brockton, 1; North Andover, 1; total, 14.

Paratyphoid fever was reported from Boston, 1.

Undulant fever was reported from Boston, 2; Worcester, 1; total, 3.

MONTHLY REPORT FOR NOVEMBER, 1934

Disease	Nov., 1934	Nov., 1933	5-Yr Average*
Anterior Poliomyelitis	7	6	27
Chicken Pox	1324	772	1023
Diphtheria	53	98	264
Dog Bite	554	332	336
Epidemic Cerebrospinal Meningitis	2	4	9
German Measles	102	28	43
Gonorrhea	596	571	501
Lobar Pneumonia	262	434	292
Measles	326	1085	542
Mumps	183	253	365
Scarlet Fever	599	694	837
Syphilis	390	385	288
Tuberculosis Pulmonary	281	295	332
Tuberculosis Other Forms	33	31	41
Typhoid Fever	11	4	18
Undulant Fever	3	2	
Whooping Cough	642	1308	649

*Report of the State Department of Public Health.

*Based on the figures for the preceding 5 years.

CASE RECORDS
of the
MASSACHUSETTS GENERAL HOSPITAL

ANTE MORTEM AND POST MORTEM RECORDS AS USED IN WEEKLY CLINICAL-PATHOLOGIC EXERCISES

EDITED BY RICHARD C. CABOT, M.D.

CASE 20511

PRESENTATION OF CASE

A fifty-three year old single American weaver entered complaining of blood in his urine.

Approximately one month before entry the patient noticed a small amount of blood in his urine. This continued for several days, being present at each micturition, disappeared for a day or two and then returned. Since that time it had been present intermittently. One week before entry he visited his physician who prescribed medicine which increased his hematuria so that it appeared to be pure blood. This condition continued until admission. He had no other urinary symptoms, no frequency, nocturia, pain or incontinence. His stream had not decreased in size. He noticed small clots of blood in his urine. During this same period he had dull pain low in his abdomen and also in his lower back. There was no pain in the costovertebral angle. He believed he had lost some weight but did not know how much. He had no shortness of breath or palpitation and had not been confined in bed.

His mother and father had died of unknown causes. One sister and one brother were living and well. There was no history of tuberculosis, cancer, diabetes, heart or kidney disease.

His past history is non-contributory. He had an appendectomy twenty years before entry.

Physical examination showed a well-developed and nourished elderly man in no discomfort. There were a few crackling râles at both bases. The heart was negative. The blood pressure was 240/115.

The temperature was 99°, the pulse 60. The respirations were 20.

Examination of the urine showed that it was grossly bloody with a specific gravity of 1.012 and a huge trace of albumin. The blood showed a red cell count of 4,000,000, with a hemoglobin of 75 per cent. The non-protein nitrogen of the blood was 36 milligrams. The bleeding time was four minutes and the clotting time four minutes.

A cystoscopy showed that the bladder mucosa was normal. Bloody urine passed down from the right ureter and clear urine from the left. A phenolsulphonephthalein test done on the left urine showed five per cent excretion. An intravenous pyelogram demonstrated bilateral enlarged and elongated kidney pelves and calices with multiple sharply defined, rounded pressure defects in practically all of the calices of both pelves. The kidneys functioned fairly well and the urinary bladder was not remarkable. The lung fields were clear and there was thickening of the apical pleura on the right.

On the third day the patient was found in a large puddle of fresh blood coming from a hemorrhoid. He said that he had had similar attacks before. He was transfused with 300 cubic centimeters of whole blood. Shortly after the beginning of the transfusion the patient became cyanotic, dyspneic and complained of pains all over his body. Soon afterwards he became pale and vomited. There were râles at both bases. He was given one-sixth of a grain of morphia. On the ward he had a severe chill following which his temperature rose to 101°. Rematching of the patient's and the donor's blood showed that they were directly compatible. His urine continued to be bloody. A cystoscopy and urethral catheterization were performed and the right kidney was flushed with one per cent silver nitrate. On the ninth day, because of the continued bleeding, a nephrostomy and pyelotomy were performed on the right. The pelvis was opened and a blood clot removed. He had a stormy postoperative course, his temperature rising to 104°. He became irrational and died approximately two weeks after admission.

DIFFERENTIAL DIAGNOSIS

DR. E. ROSS MINTZ: Painless, insidious hematuria in a male fifty-three years old immediately brings up the possibility of neoplasm of the kidney or bladder. It has been shown by various statistical studies on hematuria by various authors that papilloma of the bladder and vesical malignancy are the two chief offenders at this age. The fact that the hematuria is intermittent offers little in the way of differential diagnosis for this is known to occur in almost any disease limited to the prostate, bladder and kidney. It would be of some help to know whether the hematuria was total or terminal. If it were terminal it would strongly suggest pathology in the bladder. Total hematuria, contrary to orthodox teaching, does not necessarily mean bleeding from the kidney. It is not a privilege of renal disease to have total bleeding. Vesical lesions show it likewise. The passage of clots suggests a moderate hemorrhage, and one that is often seen in vesical and renal neoplasm. Prostatic disease and renal tuberculosis may do likewise. The patient presents no symptoms suggestive of prostatic hypertrophy or acute prostatitis. Although it is not rare to see prostatic hypertrophy at fifty-three, the dis-

ease is far more common after the sixth decade. One of the largest prostates that I have seen, however, was in a patient forty-nine years old. They have been known to occur even earlier but in almost all these cases frequency, nocturia, dysuria and the other related prostatic symptoms are present. Tuberculosis of the kidney often causes hematuria with clots, but usually urinary burning, frequency, nocturia and dysuria are associated with it, or the patient has previously had these symptoms. Acute cystitis not infrequently causes profuse hematuria with clots, especially in women of this age, yet it is usually accompanied by suprapubic pain and vesical tenesmus, and pyuria. The history of low abdominal pain and low back pain is hard to evaluate at this time without knowledge of what was found on physical examination of the abdomen. I recall a number of patients who were seen at the Massachusetts General Hospital whose presenting symptom was pain low down in the back and who were found later to have an ectopic kidney (pelvic kidney), fused kidney or crossed renal dystopia. I recently saw a case in the diagnostic clinic whose initial complaint of pain low down in the back proved to be due to polycystic disease. Hematuria with clots frequently accompanies this disease. A stone in the lower end of the ureter cannot be ruled out, but as a rule the pain is more severe and the hematuria is usually not profuse. Yet in the so-called cases of "silent stones" neither hematuria nor pain is present when the patient is examined. The low back pain plus the gross hematuria may be due to a diverticulum of the bladder which is infected or has a neoplasm within it. This is not probable but cystoscopy should rule this possibility out.

The fact that no costovertebral pain was elicited means little. Its presence would be of some significance. A history of loss of weight may or may not be of any help. Nothing is said as to whether the patient has been on a diet, whether he is or has been worrying about his condition, or any number of factors which might have contributed to the slight weight loss. As a general rule persons with a renal or vesical neoplasm lose weight only when the disease has advanced to some degree. However, a small percentage of patients who have a renal growth offer asthenia and loss of weight as their initial symptoms. In these cases the cancer has progressed to such a degree that it can be palpated abdominally, and the loss of weight is usually due to concomitant loss of appetite.

There is nothing in the patient's past or family history that is of any import.

Physical examination offers little. No mention is made of what was found on abdominal palpation. If a mass was present in either upper quadrant, this plus the hematuria would add to the probability of renal cancer. In almost all of the series of renal tumors reported, hematuria was present in from 50 to 90 per cent of the cases. In a recent large series of renal tumors, hematuria, mass and pain were present in 99.9 per cent of the cases. If bilateral upper quadrant masses were present the possibility of polycystic disease would have to be considered, yet the disease may progress to such a degree when first seen that the kidneys entirely fill the abdominal cavity and are extremely difficult to palpate. I have seen one such case come to necropsy. A bilateral mass may be due to other causes; for example, neuroblastoma, neoplasm of the kidney with metastasis to the liver, or to an enlarged liver and spleen. It is not always a simple matter to differentiate a large spleen from kidney or a large liver from kidney. Neuroblastoma rarely occurs at 53. It is essentially a disease of childhood. Renal cancer frequently metastasizes to the liver and sometimes gives rise to huge round nodules. Cases have been reported where almost all the hepatic tissue was replaced by neoplastic masses. A blood dyscrasia giving rise to an enlarged spleen and liver, and associated with hematuria, is improbable. Although a blood smear is not given, the hemoglobin, erythrocyte count, bleeding time and clotting time are not suggestive of any pathology along that line.

The blood pressure of 240/115 is highly significant and suggests the possibility of nephritis with hematuria. It is not uncommon to have gross hematuria with clots in nephritis. The urinary picture of a huge trace of albumin and a low specific gravity strongly suggests it, but is also consistent with polycystic disease of the kidney. The specific gravity in polycystic disease is usually lower than 1.012, but the large amount of blood in the urine may have been a factor in raising it. As a general rule the blood non-protein nitrogen is higher than 36 milligrams per 100 cubic centimeters, but this depends entirely on the amount of functioning renal tissue left and on the extent to which the pathologic process has progressed.

Cystoscopy definitely rules out vesical disease and focuses attention on the right kidney from which the blood was seen to come. The urine on the left was clear and the phenolsulphonephthalein on that side was 5 per cent. This is of little help as the time interval in the collection is not mentioned. The appearance time of the injected dye would be more of an aid in diagnosis. The ureteral catheter on the left may have been draining only one calyx. Intravenous pyelogram revealed bilateral enlarged and elongated kidney pelves and calices with multiple sharply defined, rounded pressure defects in practically all of the calices and pelves. If one takes the x-ray verbatim, it defi-

nitely connotes polycystic disease, unless the patient has bilateral renal tumors. This is rare, and rarer still is a renal neoplasm with metastasis to the opposite kidney. Usually the kidneys are poorly visualized in renal cystic disease after administration of the dye intravenously, due to lack of concentrative power. In these cases the blood non-protein nitrogen is usually high. Here it was within the upper limits of normal.

The profuse hemorrhage from a hemorrhoid is, I feel, incidental. It is interesting to note that a pyelonephrostomy was done and the kidney was not removed. If a kidney tumor were present it probably would have been removed, unless the patient's condition was such on the operating table that the operator deemed it unwise to remove it. I know of no indication for doing a pyelonephrostomy on a nephritic kidney.

A history of hematuria in a male fifty-three years old, with no signs referable to the prostate, a negative bladder by cystoscopy, a large trace of albumin in the urine, with a low specific gravity, a high systolic blood pressure, a characteristic if not pathognomonic pyelogram, and dull pain low in the back, all speak for polycystic disease of the kidney. Most of the cases of this disease in the adult occur between the ages of forty-five and fifty-five. The history seems rather inconsistent in that the patient had a low urinary specific gravity, a non-protein nitrogen within the normal limits, and fairly good functioning kidneys, as shown when the intravenous dye was given. Two indications for operation on polycystic kidneys are uncontrolled hematuria and pain.

Clinical Diagnoses

Polycystic kidneys.
Uremia.

Dr. E. Ross Mintz' Diagnosis

Polycystic kidneys.

Anatomic Diagnoses

Polycystic kidneys.
Operative incision: right nephrostomy and pyelotomy.
Operative scar: appendectomy.

Pathologic Discussion

Dr. Tracy B. Mallory: The postmortem examination substantiated the diagnosis of polycystic kidneys. The pair of kidneys together weighed 1250 grams, and they were large enough to nearly completely fill the posterior half of the abdominal cavity. They presented the unusual appearance of innumerable cysts, varying from two centimeters or more in diameter down to the cavities recognizable only with the aid of a small hand lens. With the development of the cysts the renal parenchyma had gradually atrophied until the largest area of kidney tissue which could be recognized measured less than one centimeter in diameter. The right kidney, of course, showed the nephrostomy opening, and the pelvis was filled with blood clots. Our incision was limited to the abdomen so that we were unable to examine the thoracic organs. The liver was large, apparently from passive congestion only, and did not show the multiple cyst formation which is frequently found in conjunction with polycystic kidneys. The appendix had evidently been removed many years before. The ureters, bladder and prostate were negative.

Polycystic kidneys, which are by no means rare, are still seldom correctly diagnosed in life. As Dr. Mintz pointed out, the enlargement may be so great that no lower pole can be palpated on either kidney and the abdomen may seem merely unusually full and prominent. The type of renal insufficiency is distinctly variable. Sometimes the picture closely simulates that of chronic glomerular nephritis; at other times it is much closer to that of malignant hypertension. When gross hematuria is present, as in the present case, the application of pyelography is indicated, and the x-ray picture is, of course, practically diagnostic. I think that it is not impossible that the use of simple flat plates of the kidney regions might often be helpful in the differential diagnosis although the pyelography is probably necessary for certain recognition.

CASE 20512

Presentation of Case

First admission. A sixty-five year old American machinist entered complaining of attacks of the spitting up of blood of fifty years' duration.

At the age of fifteen the patient on two occasions spat up small amounts of bright red blood. This was produced upon clearing his throat and not on coughing. He had no chest pain or loss of strength at any time. He had no other attacks similar to this until two and one-half years before entry when he raised a small amount of dark blood upon clearing his throat. Local applications to his pharynx relieved this condition. One month later he had another similar attack and still another the following month. Approximately fifteen months before entry, without any warning or cough, two or three mouthfuls of dark red blood poured out of his mouth. Six weeks before entry he contracted a severe cold associated with coryza and sharp pain along the anterior and lateral aspects of the lower right chest. The pain was aggravated by sneezing but not by breathing. For the first ten days there was a slight amount of dark red

blood every day. There was no cough at any time. He lost about six to eight pounds during this episode, but he regained them within a week. There were no night sweats. He consulted his physician who took x-ray films of his chest. He was told that there was a spot in the right lung.

His family and marital histories are non-contributory. There was no history of pneumonia, rheumatic fever or pleurisy.

Physical examination showed a man lying quietly in bed in no apparent distress. His upper teeth were missing; the few remaining teeth in the lower jaw were in good condition. The chest was barrel-shaped and showed very little respiratory motion, the latter being almost entirely diaphragmatic. The upper half of the right chest posteriorly was slightly more resonant than the left. The breath sounds were increased and amphoric. In that same region there were increased spoken voice and tactile fremitus. No râles were heard. Anteriorly these same signs extended down into the third intercostal space. The abdomen was protuberant. No masses or areas of tenderness were found.

The temperature was 98.4°, the pulse 80. The respirations were 20.

Examination of the urine was negative. Examination of the blood showed a red cell count of 4,430,000, with a hemoglobin of 70 per cent. The white cell count was 8,600, 78 per cent polymorphonuclears. The sputum was thin, mucoid, contained many white blood cells and a few gram-positive cocci, and showed a positive guaiac. No tubercle bacilli could be found.

X-rays of the chest showed that the right lung was considerably smaller than the left and that the heart and mediastinal shadows shifted toward the right at inspiration. The interlobar septum between the middle and the upper lobe on the right was just above the diaphragm. There was dullness in the region of the lower and middle lobes which was irregular and dense with radiating lines extending out from it. The right lung root was considerably enlarged. There was mottled dullness and calcification at both apices and infraclavicular regions.

A bronchoscopy under local anesthesia showed that the whole left side of the trachea was roughened, the mucous membrane apparently being thrown into folds. About one inch below the carina the right main bronchus was obstructed by a bleeding mass which prevented a view of the right middle-lobe bronchus. A specimen was taken.

About one week later he was started on x-ray treatments following which he had considerable reaction although his general condition remained good. He continued to receive x-ray treatment and was discharged approximately one month after admission.

History of interval. Following discharge he felt quite well for about five days, when he suddenly began to hiccup. He continued to hiccup for the next three days and soon began to have a slight cough and some trouble in swallowing more than a teaspoonful at a time.

Second admission. He was readmitted one week after his first discharge. His hiccup responded to CO_2 inhalations and he received fluids intravenously. During the next few days he began to hiccup and cough again. His temperature gradually rose and he continued to bring up mucoid material. He gradually failed and died eighteen days after admission.

Differential Diagnosis

Dr. Earle M. Chapman: This patient was an old man who once in boyhood spat up bright blood. That this was a primary infection with tuberculosis is suggested by the roentgenogram that showed infraclavicular and apical infiltration with calcification. Inactivity is proved by the absence of râles, fever and tachycardia and the lack of constitutional symptoms. He recovered from this and led an active life as a machinist. We should know his exact occupation, particularly if he was exposed to tar fumes or excessive dust. However, he continued well until two and one-half years before entry and then, at the age of sixty-three, he suddenly raised dark blood in his mouth. There are no supporting signs or symptoms, it simply came up into his mouth without effort. The dark color suggests that the blood had lain in some pouch or pool before reaching the mouth and this fact, together with the large amounts raised, makes it very unlikely that the source was in the mouth, nasopharynx or trachea above the bifurcation.

Physical examination showed signs typical of a compensatory emphysema of the right upper lung and the lack of dyspnea indicates that this mechanism, long in developing, was now adequate for pulmonary exchange.

The laboratory examinations discovered a mild secondary anemia and a sputum without tubercle bacilli but containing occult blood. The roentgenogram suggests the presence of a mass at the right hilus extending into the right lower lung fields. This does not have the character of an aneurysm but of some fixed tissue pulling the mediastinum to the right on deep inspiration, possibly a mediastinitis. A description of the course of barium in the esophagus is desirable as later we find the patient had difficulty in swallowing.

The discovery by bronchoscopy of a peculiar roughening and folding of the tracheal mucous membrane and an easily bleeding mass was followed by x-ray therapy, and it seems that he was doing fairly well until the sudden onset of hiccup, cough and fever about one week after his last treatment.

In reconstruction this case appears to be one of almost painless disease localized in the lower and middle right lung roots. We assume that he had tuberculosis arrested in childhood. Because of the lack of the symptoms and signs mentioned this does not represent an extension or reactivation of the old process.

We recall that bronchiogenic carcinoma comprises 5 to 7 per cent of all epithelial malignant tumors so we must consider it here, particularly as the right lung root is involved. The higher incidence of cancer of the right lung is attributed to the peculiarities of the more vertical right bronchus that allows the easier entrance of irritants. However, for this to be a carcinoma it is most unusual to find the patient free from pain through two years of a disease as extensive as the roentgenogram depicts and presumably involving parietal pleura. It is an extensive local disease and yet we find no evidence of metastases. Cancers of the lung have a vigorous manner of metastasizing, particularly to the central nervous system and skeleton.

The description we have of a soft bleeding mass also suggests a hemangioma or other vascular tumor, but with this type we could expect even more bleeding. Hodgkin's disease and lymphosarcoma are unlikely to be so localized and without associated adenopathy.

Syphilis of the lung, so difficult to diagnose and denied by some pathologists, is quite possible here but unfortunately we have no record of a blood Hinton test and no history of infection. The description of thickened and wrinkled mucous membrane of the trachea is interesting but not specific.

In conclusion then we have a blood-oozing neoplasm of the right lung root that has progressed without pain or metastases for two and a half years. The patient did not have a blood Hinton done but received deep x-ray therapy that may have caused degenerative changes in this neoplasm and so caused an earlier than expected death. Further classification on the clinical evidence seems impossible.

Clinical Diagnosis

Carcinoma of lung.

Dr. Earle M. Chapman's Diagnosis

Neoplasm of right lung root.

Anatomic Diagnoses

Carcinoma of the lung with metastases to the bronchial glands.
Infiltration of the right vagus nerve by metastatic bronchial gland.
Bronchopneumonia.
Pulmonary tuberculosis, healed, left.
Pleuritis, acute fibrinous with effusion, right.
Pleuritis, chronic fibrous, left.
Peritonitis, chronic fibrous.
Cholesterosis of gall bladder.

Pathologic Discussion

Dr. Tracy B. Mallory: The autopsy on this patient showed a lesion in the middle and lower lobes of the right lung. The primary bronchus and its first inferior subdivision were completely surrounded by firm white tumor without any marked degree of obstruction. The bronchus then opened into a large cavity which filled nearly all of the middle and lower lobes. This had the appearance of an ordinary abscess and no tumor could be distinguished in its walls. Medially the tumor had extended to the carinal glands and posteriorly the right vagus was found to be completely surrounded by tumor tissue. No distant metastases were found anywhere in the body. Death was probably precipitated by an area of terminal pneumonia in the left upper lobe. There was a well-marked fibrous scar at the left apex.

A considerable proportion of our cases of carcinoma of the bronchus develop, as this man's did, abscesses beyond the point of bronchial obstruction. Not infrequently the systemic reaction to the abscess may be so marked that the neoplastic symptoms are partially or entirely obscured and the differential diagnosis between carcinoma and abscess of the lung may be extremely difficult or even impossible. It is unusual for a case to die without showing evidence of metastases and, in fact, in many cases it is the metastases which first call attention to the possibility of a lung tumor. The relatively extensive sepsis in this case undoubtedly hastened his death.

Dr. Chapman was of course right in his assumption that the hemoptyses in youth had nothing to do with those which appeared in the patient's final illness and the definite palpable scar bears witness to the once active pulmonary tuberculosis which was responsible for the former.

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AD INTERIM

THIS is the season, medically as well as socially, for hearty greetings and joviality. It is the season for that familiar last minute scramble to catch up with our work before Christmas so that our wives' families—who never understand why the medical son-in-law cannot promise not to be late for the clan Christmas dinner—may not bite our heads off. It is the season of good feeling and good fellowship, natural or forced, and cheerful busy days which culminate in the hazy hilarity of December 25th. Then comes the slump. The morning of the 26th has nothing to offer us but the recollection of bills owed to us and by us. Work, which was overabundant before the holiday, has melted away. No one can afford to be ill with the heavy after-Christmas reckoning awaiting him. We go back to our suddenly vacant offices and sit chewing the pencils that our young nephews gave us for Christmas. We write tiresome letters which we had all too eagerly postponed until the holiday rush should be over. We look out of our windows and see nothing but the cheerless rut of our own existence, and inevitably our minds turn back to the Depression. A few hearty souls may succeed in wearing their festive air until after New Year's, but the rest of us hate them for it, with a dull loathing. We tell each other gloomily that the medical profession is hit harder than any other and will be the last to recover—if it ever does.

All of which is quite unnecessary. Without being unpleasantly pious about it, we can, if we will, find a good many bright spots in our lives. The whole world is undeniably in a precarious state, with America, perhaps, heading the landslide, and the medical profession suffers with the rest of mankind. But not any more than the rest. We may have uncollected bills, but a lot of people are doing their best to pay us what they owe, and many of those who cannot pay in money pay in genuine gratitude. Our practices may be falling off, but that gives us a little extra time for research or for the book which we never had time to write. It is said that when a doctor has leisure, he does not know what to do with it. If that is true, then it is high time we learned. The intelligent planning of leisure hours ought to be the concern of every educated person.

But the greatest satisfaction to us should be the knowledge that our work, unlike that of some of our less fortunate acquaintances, is as vital, as absorbing, as intellectually and spiritually rewarding in hard times as it is in prosperous days. When business concerns are closing, when banks are failing, when politics are in a turmoil, the science and practice of medicine, in spite of all difficulties, go steadily on. It is the one essential profession in the life of man. If the economic structure of the world crashes, then we, in common with everyone else, must undergo changes. But though the system of conducting our profession may change, it will be a metamorphosis and not a destruction. Man cannot live without medicine. The cataclysm may never come, and meanwhile we have plenty to do, plenty to teach and plenty to learn. Instead of making gloomy prophecies, let us acknowledge that we are better off than lots of other people. Let us welcome our enforced leisure hours (which we used to sigh for) and try to use them pleasantly and profitably. Above all, let us stand together and by our example show that it is still possible to live sanely, intelligently and cheerfully, with an enthusiasm for work and a zest for leisure.

MORTALITY RATES OF TUBERCULOSIS

FREDERICK L. HOFFMAN in *The Spectator* of October 25, 1934 depicts some of the encouraging facts related to the decline of pulmonary tuber-

culosis as shown by the record of 67,417 deaths from this disease in the entire United States during 1933, which is a rate of 53.6 per 100,000 of the population as compared with 56.4 for 1932 and 60.7 for 1931. The 1933 rate is the lowest on record and the author believes this to be especially significant because of the economic depression which might have been expected to influence the mortality rates among the lower income groups unfavorably. It may be, however, that the rates would have been appreciably lower if there had been less disturbance of the morale of the people. Taking the records of fifty-nine American cities since 1910, Hoffman shows that in this group the decline has been continuous from a mortality rate of 174.4 in 1910 to 54.3 in 1933. In these fifty-nine cities the population has increased about fifty per cent and the tuberculosis mortality decreased by about fifty per cent.

Besides the deaths in the whole country from the pulmonary form there were 7419 deaths from other parts of the body invaded by the disease, making the total mortality figures, accredited to tuberculosis in 1933, 74,836. Of the larger cities the pulmonary form of the disease in 1933 had a mortality rate of 49.5 in Chicago, 49.6 in Detroit, 66.5 in Los Angeles, 55.3 in New York, and 62.2 in Philadelphia. The Boston rate was 60.9.

With few exceptions the rates in the cities with a large Negro population are much higher.

The highest rate for a state is that of 232.9 for Arizona which may be explained by the number of cases seeking a favorable climate.

The lowest rate is that of 17.4 for Utah.

In referring to New Zealand which had a rate of 33.5 in 1927, the author feels that "If New Zealand can maintain a pulmonary tuberculosis death rate of 33.5 per 100,000, it would seem not unreasonable to suppose that a somewhat similar result could be secured for this country. This, however, depends entirely upon continued adequate support of all anti-tuberculosis agencies, which one and all are rendering admirable service and producing results to an amazing degree of genuine success."

Even with the encouraging figures submitted in Hoffman's analysis it is evident that a disease which kills over seventy thousand people in a year in the United States is far from being controlled, and further studies are indicated. Preventive medicine must continue to be the greater resource in the anti-tuberculosis campaign.

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors:

BARNEY, J. DELLINGER. A.B., M.D. Harvard University Medical School 1904. F.A.C.S. Chief of Service, Urological Department, Massachusetts General Hospital. Assistant Professor of Genito-Urinary Surgery, Harvard Medical School. Address: 87 Marlboro Street, Boston, Massachusetts. Associated with him is

KELLEY, SYLVESTER B. M.D. Harvard University Medical School 1929. Assistant Urologist, Massachusetts General Hospital. Junior Surgeon, Chelsea Memorial Hospital. Address: 87 Marlboro Street, Boston, Massachusetts. Their subject is "The Value of Prolonged Preoperative Drainage in Prostatic Obstruction." Page 1127.

WAGENER, HENRY P. M.D. Medical College of the State of South Carolina 1913. Section on Ophthalmology, The Mayo Clinic. Address: The Mayo Clinic, Rochester, Minnesota. Associated with him are

DRY, THOMAS J. STORY. M.B., M.D. University of Cape Town Faculty of Medicine, Cape Town, South Africa, 1929. Fellow in Medicine, The Mayo Foundation. Address: The Mayo Clinic, Rochester, Minnesota. And

WILDER, RUSSELL M. M.D. Rush Medical College, University of Chicago 1912. Division of Medicine, The Mayo Clinic, Rochester, Minnesota. Address: The Mayo Clinic, Rochester, Minnesota. Their subject is "Retinitis in Diabetes." Page 1131.

TAYLOR, GRANTLEY W. A.B., M.D. Harvard University Medical School 1922. F.A.C.S. Assistant in Surgery, Harvard Medical School. Assistant Surgeon to Out-Patient Department, Massachusetts General Hospital. Surgeon, Collis P. Huntington Memorial Hospital, Pondville Hospital, and Surgeon to Out-Patients, Palmer Memorial Hospital. Visiting Surgeon, House of Good Samaritan. His subject is "Artificial Menopause in Carcinoma of the Breast." Page 1138. Address: 264 Beacon Street, Boston, Massachusetts.

BUNKER, JOHN W. M. A.B., A.M., Ph.D. Professor of Physiology and Biochemistry, Massachusetts Institute of Technology. Address: Massachusetts Institute of Technology, Cambridge, Massachusetts. Associated with him is

HARRIS, ROBERT S. S.B. Research Associate, Massachusetts Institute of Technology. Address: Massachusetts Institute of Technology, Cambridge, Massachusetts. Their subject is "The Clinical Status of Vitamin D Milks." Page 1140.

HAWES, JOHN B. 2ND. A.B., M.D. Harvard University Medical School 1903. President, Boston Tuberculosis Association. Director, Rutland Cottage Sanatoria, Massachusetts Tuberculosis League and National Tuberculosis Association. Address: 11 Marlboro Street, Boston, Massachusetts. Associated with him is

STONE, MOSES J. M.D. Tufts College Medical School 1921. Assistant Professor in Diseases of

the Chest, Boston University School of Medicine. Physician, Massachusetts Memorial Hospitals, Chest Clinic, and Tuberculosis Clinics of the Boston Health Department. Assistant in Medicine at the Beth Israel Hospital. Address: 11 Marlboro Street, Boston, Massachusetts. Their subject is "The Effect of Acute Respiratory Tract Infections Upon Latent Silicosis." Page 1147.

MARSH, L. CODY. A.B. (D.N.B.), M.D. Albany Medical College 1929. Formerly, Assistant Physician, Kings Park State Hospital and Worcester State Hospital; Consultant, Worcester State Hospital, and Director, Boston Re-educational Institute. Now Director, La Casa del Encanto, Tucson, Arizona. His subject is "The Psychiatric Hazards of Medical Practice." Page 1149. Address: Box 4365 University Station, Tucson, Arizona.

HISCOCK, IRA V. M.A. C.P.H. Professor of Public Health, Yale School of Medicine. Member, Board of Health Commissioners, New Haven, Conn. Governing Council, American Public Health Association. President, New Haven Council of Social Agencies. His subject is "What Is An Adequate Health Program?" Page 1153. Address: Yale University, New Haven, Connecticut.

WOODBURY, MARION C. R.N. Director of Nursing Service, Southern Berkshire Union Health District. Executive Director, Visiting Nurse Association of Great Barrington, Inc. Her subject is "Health Resources in Southern Berkshire." Page 1156. Address: 54 Castle Street, Great Barrington, Massachusetts.

BURTON, FLORA E. A.B. Graduate of Simmons School of Social Work. Supervisor of Social Service, Massachusetts State Infirmary, Tewksbury, Massachusetts. Her subject is "The State Infirmary." Page 1158. Address: Room 30, State House, Boston, Massachusetts.

TURNER, LUCY A. Graduate of Boston School of Social Work. General Secretary, Worcester Children's Friend Society, Worcester, Massachusetts. Her subject is "Convalescents in Health Units." Page 1159. Address: 2 State Street, Worcester, Massachusetts.

MISCELLANY

THE ATLANTA, GEORGIA, PLAN FOR MEDICAL CARE

The Fulton County Medical Relief Association offers a new plan for people of moderate means to have adequate medical care and free choice of doctor, by making small monthly payments.

THE EXPLANATION AND CONDITIONS

Do you find it difficult or impossible with your present income to pay for medical care?

If so—you will be interested in this new plan.

The Fulton County Medical Relief Association offers a means whereby people of moderate incomes may obtain adequate medical care at all times at a nominal cost if they are members of the association.

The association is sponsored by the Fulton County Medical Society, comprising practically all of the ethical doctors in the county: physicians, surgeons and specialists.

The service which members of the relief association may obtain includes all forms of medical examination and treatment: surgical, obstetrical (a special rate for obstetrical patients), x-ray, laboratory, eye, ear, nose and throat; consultation, office calls and home and hospital visits. It does *not* include hospitalization, drugs or nursing.

The majority of the members of the Fulton County Medical Society are available to members of the association. The association does *not* furnish or select the doctor. Members have free choice of doctors—and the monthly payments cover the bills.

Members have the privilege of continuing the services of their regular family physician, if his name is on the roster of the association, or they may call any other doctor on the list. Of course, the doctor has the privilege of declining the call, just as he may decline calls from non-members. Membership in the association is open to any white person in good health, except drug addicts and alcoholics, residing in Atlanta and vicinity, whose income does *not* exceed:

$75.00 per month for persons without dependents.

$125.00 per month for persons with one dependent.

$135.00 per month for persons with two dependents.

$145.00 per month for persons with three dependents.

$150.00 per month for persons with four or more dependents.

Separate applications are required for each member. A special inducement is offered families who wish to carry membership on each member. The payments are as follows:

Single membership $1.50 per month plus $1.00 initiation fee.

Membership for a second member of a family is $1.00 per month plus $1.00 initiation fee.

Membership for a third member of a family is 75 cents per month plus 50 cents initiation fee.

Membership for fourth and each additional member of a family is 50 cents per month plus 50 cents nitiation fee.

Initiation fee and one monthly payment must accompany each application.

Application forms may be obtained at the office of the association, 38 Prescott Street, N. E., Atlanta, Ga.

If your application is accepted, membership card and receipt will be sent to you. If rejected, your money will be returned promptly.

Applications are passed upon by the board of directors consisting of five doctors, elected from the membership of the Fulton County Medical Society and who serve without pay.

Upon acceptance of your application, you may obtain the services of physicians whose names are on the roster of the association after only fifteen days' waiting period. However, in case of accident the waiting period is waived and the service of your doctor becomes obtainable immediately.

In calling your doctor after becoming a member, notify him that you have joined the association. When he arrives, show him your membership card and receipt. His bill will be covered by your monthly payments of $1.50.

Payments are due monthly in advance and should be made at the office of the association. However, a grace period of fifteen days is allowed. If you fail to make any payment when due, application for reinstatement may be made at any time upon payment of a reinstatement fee of $1.00 and the resumption of the regular monthly payments.

Obstetrical cases applying for membership will be admitted upon payments for one year in advance plus $10.00 delivery fee. Tonsil cases will be accepted upon payment of twelve months in advance, plus $15.00.

The association was formed to enable individuals of moderate means to obtain adequate medical care.

The plan represents an advanced step in making obtainable adequate medical care to thousands of persons who have been unable to obtain the service they need. If you can qualify for membership under the plan as outlined here, communicate with the office of the association.

THE FULTON COUNTY MEDICAL RELIEF ASSOCIATION.
38 Prescott Street, N. E., Atlanta.

COMPARISON OF DISEASE INCIDENCE IN CONNECTICUT WITH 1933 AND SEVEN YEAR AVERAGE

MONTH ENDING DECEMBER 8, 1934

Diseases	1934 Week ending Nov. 17	1934 Week ending Nov. 24	1934 Week ending Dec. 1	1934 Week ending Dec. 8	Average cases reported for week corresponding to Dec. 8 for past seven years	1933 Week ending Nov. 18	1933 Week ending Nov. 25	1933 Week ending Dec. 2	1933 Week ending Dec. 9
Botulism	—	—	—	—	—	—	—	1	—
Cerebrospinal Men.	—	—	2	—	2	2	—	2	—
Chicken Pox	73	199	142	291	113	110	141	106	162
Diphtheria	3	1	2	3	19	10	14	4	5
Dysentery Amebic	—	—	—	—	—	3	1	—	—
Dysentery Bacillary	4	1	6	—	—	—	—	—	—
Encephalitis Epid.	1	—	—	—	—	—	1	—	—
German Measles	1	—	—	16	5	—	—	3	1
Influenza	4	1	1	1	8	3	17	4	10
Measles	209	222	258	272	41	5	13	10	10
Mumps	20	13	16	24	47	43	60	25	59
Paratyphoid Fever	—	1	—	—	—	—	—	—	—
Pneumonia (Broncho)	16	24	15	21	33	53	57	48	69
Pneumonia (Lobar)	16	17	16	17	37	58	59	55	56
Poliomyelitis	—	—	—	—	—	—	—	1	1
Psittacosis	—	—	—	—	—	—	1	—	—
Scarlet Fever	34	45	38	36	63	60	71	54	76
Septic Sore Throat	—	6	1	4	—	—	—	—	—
Smallpox	—	—	—	—	6	—	—	—	—
Tetanus	—	—	—	—	—	1	—	1	—
Trichinosis	4	—	4	3	—	—	—	—	—
Tuberculosis (Pul.)	11	44	31	15	26	20	16	28	13
Tuberculosis (O. F.)	1	1	1	2	2	1	—	4	1
Typhoid Fever	—	2	—	1	3	1	1	—	—
Undulant Fever	—	1	1	4	—	2	1	—	1
Whooping Cough	72	65	36	89	65	54	52	31	44
Gonorrhea	23	30	41	54	41	19	36	36	56
Syphilis	30	64	67	51	60	32	25	67	48

Remarks: No cases of Asiatic cholera, glanders, plague or yellow fever during the past seven years.

THE PROMOTION OF DR. MARTHA M. ELIOT

Department of Labor
Office of the Secretary

Secretary of Labor Perkins, December 4, announced the promotion of Dr. Martha M. Eliot, Director of the Child and Maternal Health Division to Assistant Chief of the Children's Bureau. The position is a Civil Service one. Dr. Eliot will have special responsibility for the development of the child and maternal health program of the Children's Bureau, including the relationship of mental health to the prevention of delinquency.

Dr. Eliot joined the staff of the Children's Bureau in 1924 and has just completed her tenth year as director of the division of child and maternal health. Of New England ancestry, after graduation from Radcliffe, Dr. Eliot engaged in social work in Boston before entering the Johns Hopkins Medical School. After obtaining her medical degree, Dr. Eliot served as house officer at the Peter Bent Brigham Hospital in Boston and later was in residence at the St. Louis Children's Hospital and the New Haven Hospital, in the Department of Pediatrics. Since 1921 she has been on the staff of the Department of Pediatrics of the Yale University School of Medicine and for the past several years has been associate clinical professor of pediatrics at that institution.

During this period Dr. Eliot has had charge of the extensive studies of rickets, of neonatal mortality and morbidity, and of the effects of antirachitic treatment in infancy on skeletal and tooth development of children which the Children's Bureau has carried on in coöperation with the Yale Medical School.

Dr. Eliot is a trustee of Radcliffe College, a member of the American Pediatric Society, Chairman of the Child Health Committee of the American Academy of Pediatrics, and consultant on child health of the Association of State and Provincial Health Officers.

CORRESPONDENCE

A CRITICISM OF EXISTING CONDITIONS

Editor, *New England Journal of Medicine*,

The Boston Herald of December 8 carried a news item entitled: "City Hospital Aid Needy. Mayor Issues Order—Will Visit Homes of Destitute Sick."

We learn that the Boston Dispensary is unable to take care of the ever-increasing number of welfare cases and that the mayor issued an executive order that the interns of the Boston City Hospital take care of these patients in their homes. Dr. Charles F. Wilinsky, Deputy Health Commissioner and Director of the Beth Israel Hospital, came out with a complete approval of the new order.

"I can see enormous advantages to the interns being able to obtain this training and experience" (to take care of poor patients in their homes), "before entering their private practice," says Dr. Wilinsky. Following the trend of thoughts of Dr. Wilinsky, the City of Boston ought to do away with the district nurses as well and use the pupil nurses instead.

One may ask, "What about the welfare of the poor patients who will be treated by inexperienced interns?"

It is a known fact that the Boston Dispensary physicians who take care of these patients are well-qualified experienced men, who receive $1200 annual salary.

Why should not the City of Boston do at least as well as a private charitable institution does?

Are not the physicians of Boston paying taxes to the city?

Would it not be in line with the generally accepted method of practicing medicine in America, if the unemployed poor would be allowed to call upon his family physician, to treat him and his family while the City of Boston should pay the physician a nominal fee, instead of pauperizing the unemployed patient. I am sure every physician will be glad to reduce his regular fee when it comes to treating the unemployed.

One may question the propriety of a physician holding two paying positions, of advising in the matter of medical care of the needy at a time when the average family physician himself feels all the hardships of the depression.

Should it not, rather, be the concern of the Massachusetts Medical Society, especially the broad masses of its membership engaged in the actual practice of everyday medicine?

Sincerely yours,

SAMUEL G. PAVLO, M.D.

356 Ferry Street,
Malden, Mass.

EDITORIAL NOTE: The implied criticism in one particular shows that the writer of the above letter is not familiar with Dr. Wilinsky's contributions of time, energy and, in addition, money to charitable projects in Boston. Detailed explanations of Dr. Wilinsky's contributions to charity and public welfare might not be approved by him, and we refrain from further comment except to suggest that, while practical solutions of our economic problems are in order, one should refrain from criticism of honorable public servants.

A DUBIOUS MILITARY PROPOSAL

Editor, *New England Journal of Medicine*,

The following is from "Gentleman Johnny Burgoyne," by F. J. Hudleston, Librarian of the British War Office. (Garden City Publishing Co., Inc., New York, 1927.)

The quotation:

"To be perfectly fair to Gage, he had one great admirer, and that was a Major Donkin, author of Military Collections and Remarks, published at New York in 1777. . . . Donkin's book is bibliographically of great interest. Page 190 deals 'with bows,' and I believe there are very few, if any, copies in existence

in which a passage of this page has not been cut out. And no wonder. For this Major, who ought to have been ashamed of himself, actually proposed that arrows should be infected with smallpox and used against the Americans."

In a footnote Hudleston tells us that: "Burgoyne was his (Gage's) pen. It should be mentioned that Donkin served under Gage, so may have been prejudiced in his favor."

Very truly yours,

WM. PEARCE COUES, M.D.
12 Monmouth Court, Brookline, Mass.

RECENT DEATHS

DOW—GEORGE FARWELL DOW, M.D., of 20 Woburn Street, Reading, Mass., died at his home, December 9, 1934. He was born in Harvard, Mass., the son of John Osborn and Frances A. (Phelps) Dow, in 1869.

He prepared for Harvard College at Phillips Andover Academy and graduated with the class of 1892. He graduated from the Harvard Medical School in 1896, served an interneship at the Boston City Hospital and adopted Reading as his field of practice.

He joined the Massachusetts Medical Society in 1897 and was also a Fellow of the American Medical Association. He enlisted for military service in the Spanish-American War with Company A of Wakefield of the Sixth Massachusetts Regiment as surgeon with the rank of major. During the World War he was a member of the Reading draft board and later was commissioned captain. He was a member of the Stoneham Camp of Spanish War Veterans and was a member of the Harvard Club.

He was trustee of the John M. Harlow Fund, the income of which is applied to the support of the Middlesex East District Medical Society.

He is survived by his widow, Mrs. Gertrude M. (Thresher) Dow, and two sons, John Aldrich Dow and Richard Phelps Dow, all of Reading.

HALPIN—JAMES ANTHONY HALPIN, M.D., Chief of the Medical Service at the United States Naval Hospital in Chelsea, Mass., died at the hospital, December 11, 1934. Dr. Halpin was born in Washington, D. C., in 1890, the son of the late James and Mary (Walsh) Halpin. He was educated at the Immaculate Conception Parochial School in Washington and at Rock Hill College.

He graduated in medicine from the Georgetown University School of Medicine in 1912. He entered the Navy and served at the following designated stations: The Asiatic Division, the Dispensary and Naval Hospital in Washington, D. C.; St. Thomas, Virgin Islands, and Newport, Rhode Island. He then did sea duty, following which he served as Chief of Service at the Chelsea Naval Hospital.

Dr. Halpin was a Fellow of the American Medical Association. He was accorded the honor of a military funeral and was buried at the Arlington National Cemetery.

He is survived by his widow, Mrs. Frances (Croggan) Halpin; a daughter, Jeanne, aged eight, and a son, James A. Halpin, Jr., aged fifteen.

HENIN — CHARLES CHAIMOR HENIN, M.D., of 274 Forest Park Avenue, Springfield, Massachusetts, died in that city, December 14, 1934. He was born in 1873 and had practiced in Springfield for many years.

ROCHETTE—EDWARD CHARLES ROCHETTE, M.D., of 14 Channing Street, Worcester, Mass., died at the St. Vincent Hospital, Worcester, December 13, 1934, following an operation. He was born in 1880 and graduated in medicine from the Harvard Medical School in 1903.

Dr. Rochette was President of the Louis Pasteur Hospital and a member of its Medical Staff. He was the physician of the St. Jean De Baptiste Society and Court Papineau Franco-American Forresters, and served the city of Worcester as assistant city physician.

He joined the Massachusetts Medical Society in 1904 and was also a Fellow of the American Medical Association. His memberships included the Harvard Club of Boston, the Economic Club, the Worcester Lodge of Elks, the Harmony Club, Court Papineau St. Jean De Baptiste Society, Order of the Red Men and other societies.

Dr. Rochette is survived by his widow, his mother, a son and two brothers.

SMITH — THEOBALD SMITH, M.D., of Princeton, N. Y., and President of the Board of Rockefeller Institute, died in a New York hospital, December 10, 1934. He was born in 1859 at Albany, N. Y., graduated from Cornell University in 1881 and from the Albany Medical College in 1883.

After several years of work in pathology at Washington, and as lecturer and professor in Columbian University (now George Washington University), he came to Harvard occupying the chairs of Applied Zoölogy and Comparative Pathology. He was director of the antitoxin and vaccine laboratory and pathologist of the Massachusetts State Board of Health until 1914 when he transferred his field of operations to the Rockefeller Institute for Medical Research. He had been a scientific director of the Institute since its foundation in 1901. Dr. Smith had received a great number of awards and medals from the Universities and Societies here and abroad, for his contributions to preventive medicine have been many and of the greatest importance. His biography will be replete with the great accomplishments of this remarkable scientist.

Dr. Smith joined the Massachusetts Medical Society in 1902 and resigned in 1916.

He is survived by his widow, Mrs. Lillian Hillyer Eggleston Smith; two daughters, Dr. Dorothea E. Smith of Bryn Mawr, Mrs. Robert E. Foerster of Princeton, N. J., and a son, Philip H. Smith of Pawling, N. Y.

OBITUARY

A MEMORIAL TO DR. H. W. CUSHING

Dr. Hayward W. Cushing was born in Boston in 1854. He graduated from Harvard College in 1877, from the Medical School in 1882, studied abroad, did surgery here, was on the staff of the Carney, the Children's and the City Hospitals for many years, retired for reasons of health in 1905, and passed away May 9, 1934, at the age of eighty. He was a member of a number of Medical Societies, including the Boston Surgical Society, American College of Surgeons and American Surgical Association.

These are the bare data, but in fact Dr. Cushing in his day meant much more. His day was forty years ago. With the passing of Gay, Post and Cushing, no one is left of a grand old group of Boston surgeons save Francis S. Watson. They were very vital figures, very important in the development of the surgery of their time, a surgery different from that of to-day and belonging to men of initiative, courage and clear thinking, reliant for knowledge founded on observation and experience with little enough help from precise science.

Their day is long gone and there are only a few who had the real privilege of working under them even in their later years, or can recall how large they bulked years ago.

Dr. Cushing was always quiet and reserved. Because of his modesty and reserve he was known only to those who worked with him and those leaders who recognized his worth. Cultured in mind and manner, he was preëminently a scholar of vast reading and knowledge, and the most exact of operators, with a meticulous technic, stranger then than it would be to-day.

He was not an emergency surgeon, his work was always deliberate, studied, planned. But what he had planned usually came to pass, without mistakes and with few failures.

It is usually forgotten that he and Eliot were the first surgeons in America to do successful intestinal surgery, and Cushing's work on hypo- and epispadias was in a class by itself.

Dr. Cushing was notable as a scholar in surgery, as a diagnostician, as an investigator, a preëminent technician outstanding in a distinguished group of the later pioneers in surgery.

HORACE BINNEY, M.D.,
WILLIAM R. MORRISON, M.D.

At a meeting of the Senior Staff of the Boston City Hospital on December 6, 1934, at which the above Memorial was read, it was Voted that the Memorial of Dr. Cushing be spread upon the records of the Boston City Hospital and copies be sent to Dr. Cushing's family and to the *New England Journal of Medicine*.

P. F. BUTLER, M.D., *Secretary*,
Senior Staff.

December 6, 1934.

REPORTS AND NOTICES OF MEETINGS

THE NEW ENGLAND OPHTHALMOLOGICAL SOCIETY

The November meeting of the New England Ophthalmological Society was held on November 20, 1934, at the Massachusetts Eye and Ear Infirmary. Several cases of hereditary eye conditions were presented. Most of these were of the recessive type, a few dominant, but none of the sex-linked. Two sisters with monochromatism, complete color-blindness, were presented. In this condition there is no rod function; there is marked photophobia and the patient sees better at night. There is a fine nystagmus. This is possibly a recessive Mendelian character. Two cases of congenital anophthalmos, also recessive, three cases of albinism, a case of retinitis pigmentosa, and a case of buphthalmos, all recessive, were shown. A congenital cataract was demonstrated as a dominant trait. It had been present in six consecutive generations. Two cases of congenital dislocation of the lens, also dominant, were displayed.

Dr. Allen Greenwood discussed three cases of eye muscle trouble. The first of these was that of diplopia of unknown etiology which at one time was considered to be myasthenia gravis. The other two cases were patients with squint and in these Dr. Greenwood stressed the use of a bifocal glass in the cure of these conditions.

Dr. Viets discussed the first of Dr. Greenwood's cases and said that he believed a brain tumor was likely. He brought out the fact that the patient had severe, frontal, intermittent headaches lasting for two or three hours frequently, and periods of collapse. There were no neurological signs; the spinal pressure was one hundred and eighty-five millimeters of mercury and the protein was slightly elevated. Such intermittent signs seem to be characteristic of third ventricle tumors, according to Dandy.

Dr. Sachs presented the case of a man without an iris or lens which was the result of a blow he had received four months ago and who could see practically normally now with glasses.

Dr. Clyde E. Keeler from the Howe Laboratory for Ophthalmic Research presented a paper on "Heredity in Ophthalmology." Since John Dalton studied his own case of color blindness one hundred and forty years ago, there have been estimates that from five to thirty per cent of blindness is due to hereditary conditions. Dr. Keeler has found that from fifteen to twenty-five per cent of the blindness in blind schools is due to heredity. It is difficult to study heredity in man because of the long growth period, the long gestation, and the social aspects which make laboratory experimentation impossible. This science must be studied in a roundabout way including parallel studies carried on with animals.

Genes represent inherited characteristics and are arranged in definite positions on the chromosomes. Their chemical formula is unknown, but their size is slightly larger than the hemoglobin molecule. Some are stable and others tend to mutate. They always produce definite effects at the proper time, and each gene is represented twice in each somatic cell, once from the mother and once from the father.

Dr. Keeler explained the use of laboratory animals in a study of hereditary conditions. This depends to a large extent on inbreeding. When a character is discovered an attempt is made to produce a strain with this character, and if it is recessive, inbreeding is the best way to bring it out. The animals are also outcrossed with other strains to see if the character is dominant, recessive, sex-linked, or irregular. The character is crossed with other mutants to see if there is any linkage or if it is completely independent. If there is linkage, the percentage of crossing over is determined. Also the physiology and embryology of the defect is studied as well as its variability in the abundant material which is provided by the breeding experiments.

The following conclusions from the above studies have been made: first, in the laboratory it is found that these characters are usually recessive and that inbreeding must be resorted to to bring them out, such as is the case with cousin marriages in human beings; secondly, that the residual hereditary background of the individual may alter the manifestations of the character; that is to say that occasionally recessives may act as dominants due to the different hereditary background of the animal, yet it is caused by the same unmodified gene; thirdly, there is considerable variability in the expression of the same gene just as allergy may have any one of a series of different manifestations in the human being; fourthly, the character is often changed when combined with other known characters.

Different genes may have the same effect so that some dominant, recessive, and sex-linked genes may produce similar conditions, which cannot be told apart except by their breeding behavior. A further difficulty in studying human heredity is that patients tend to exaggerate or minimize, or do not know their family histories. There are certain glaring examples in the literature of impossible family trees where the investigator has been too prone to accept the word of his patients.

Human characters are usually dominant because human beings are usually outbred. Sex-linked characters are the next most common, as they only need one gene for expression in the male and so in males are dominant. Such characters will appear in the female line also if the family is inbred. Some human genes are irregular dominants. Some people do not show the character themselves, but their children do because of the different total heredity. Such people who do not show dominant characters are called normal overlaps. Different expressions of the same gene may differ at different ages. Environmental influences may produce characters which appear to be the same as, and are often confused with, hereditary characters.

From the laboratory statistics it is probable that mutations are occurring frequently in the human as well as in the rest of the animal kingdom. This is especially true of the dominant characteristics and the same mutations often recur independently in different parts of the country. There are two phases of heredity which need more attention both in the laboratory and clinical studies; first, the residual hereditary background; and secondly, mutations taking place in germ plasm.

In the schools for the blind Dr. Keeler has studied the pedigrees of numerous patients with various eye conditions, among these optic nerve atrophy, dislocation of the lens, congenital cataract and eye muscle conditions. Dr. Keeler closed his discussion by showing several animals with newly discovered hereditary defects.

Professor Gregory Pincus from the Institute of Biology of Harvard University discussed the paper and brought up the question of what we shall do about these undesirable hereditary conditions. He feels that there is only one practical measure, and that is that relatives should not mate. However, when a gene once gets into the population it tends to stick, and it is especially difficult to get rid of, if it is recessive. He believes that a more fundamental way of meeting the situation is to study the way in which the single gene develops from the egg to the adult and how it affects the individual in such a way as to bring out the peculiar character which it represents. This is a problem in cell chemistry and Dr. Pincus suggested that it might be possible to increase the number of normal overlaps, if the chemistry and environmental factors causing this condition could be discovered.

BOSTON SOCIETY OF BIOLOGISTS

The November meeting of the Boston Society of Biologists was held on the twenty-first of November, 1934, at the Library of the Children's Hospital. Dr. George B. Wislocki called the meeting to order, and introduced M. Dwight Baker as the first speaker of the evening. She reported the work done by Dr. F. H. Scharles and herself at the Huntington Memorial Hospital on "Hexosephosphates as Sources of Lactic Acid in Tissues." Warburg found that in tumor tissues lactic acid was produced from glucose in the presence of nitrogen, as well as in the presence of oxygen. This process is known as anaerobic glycolysis and is also found in minced muscle tissue. In the breakdown of carbohydrates, glycogen is first broken down into lower saccharides and a hexosephosphate formed. Lactic acid is then formed after going through a process of esterification. There are three stages necessary for this process: first, glycogenolysis; secondly, esterification; and thirdly, glycolysis. Adenosine triphosphate, a coenzyme, is a necessary part of the last stage of this process. By destroying this coenzyme the reaction

can be blocked at this point, and the intermediate products studied.

A tumor extract was incubated with glycogen, but no lactic acid was formed. The addition of adenosine triphosphate made no difference. Further study showed that there was very little esterification, and, therefore, hexosephosphate was supplied, and lactic acid was formed. If hexosemonophosphate is used, instead of the diphosphate, lactic acid is formed without forming diphosphate, while in muscle the monophosphate is first changed into diphosphate.

The above method, whereby the anaerobic glycolysis of embryo and tumor tissues can be studied, is an important advance in tumor research. Dr. Salter discussed the paper briefly, and pointed out the importance of this advance. He said that there is not much known of the metabolism in other tissues, and he is not sure that this process is typical of malignant tissue only. The mouse sarcoma is the only tumor studied so far. It was pointed out that anaerobic glycolysis is very high in retinal tissue, and also it is found in kidney tissue.

The second speaker of the evening was Dr. Magnus I. Gregersen, who discussed "Plasma Volume Determination with Dyes: Revision and Evaluation of the Method." The determination of plasma volume is largely a matter of the concentration and dilution of dyes in the blood. A small amount, from five to twenty cubic centimeters, of concentrated dye is injected into the blood stream, and when it has been thoroughly mixed a small amount is withdrawn and the concentration of the dye calculated. Colorimetric methods have been used in determining the concentration, but the difficulty has been that the solvent (plasma) also has color and it has been difficult to compensate for this. Standards may be made up with plasma, but unless the concentration of the dye in the standard is exactly the same as in the sample to be determined, a large error is involved, because of the color effect of the plasma, so that an error of five hundred out of nine hundred cubic centimeters may easily be made. To avoid this a compensating colorimeter has been used where two sets of plungers and cups are superimposed upon each other to offset the difficulty. This does not work well, however, due to hemolysis, so that a spectrophotometer has been used by Dr. Gregersen. Two beams of light of equal intensity are polarized and then put through prisms which break the light up into its different wavelengths, so that any wavelength may be put through the solution. There is a nicol prism analyzer in the eyepiece.

It is most important to choose the proper dye, and Dr. Gregersen has found that a blue dye, by name T 1824, gives a range of absorption in which hemoglobin has but little absorption, and therefore, the hemolysis present in the solution can be ignored. After this dye has been in the circulation for ten minutes, it is thoroughly mixed and its rate of disappearance is slow, from five to eight per cent per hour. Since the percentage of cells differs in different parts of the circulation, only the total plasma volume can be determined. Only a very small amount of dye is needed, and no coloration of the skin results. About ten milligrams are used and it has been found that one hundred and twenty-five times this dose is not toxic to rats, although excessively high doses give marked liver damage with a central necrosis, fatty change, and cirrhosis.

Dr. Wislocki discussed what happens to vital dyes in the body and said that they are stored in macrophages and in the reticulo-endothelial system. The storage of diazo dyes depends on dispersion and since they are colloidal, they are gradually eliminated from the body through the kidneys, and less through the bile. The less dispersible dyes are eliminated by the kidney, while the coarser ones are eliminated via the liver and bile. In this T 1824 dye the particles are probably large, and therefore, the question of damage to the liver cells is important. The tetraiodophthalein dye used in the Graham test also probably has large particles, and it may be wondered whether this dye may damage the liver.

The last speaker of the evening, Dr. George Wald, discussed "Night Blindness and the Vitamin A Cycle in Vision." Night blindness is a condition in which the rod vision is impaired and, therefore, objects are seen with more difficulty in a dim light. This is due to a loss of visual purple in the rods, since it is resynthesized much more slowly. By depriving animals of vitamin A for as short a period as three weeks a high degree of night blindness can be obtained, and this can be made to disappear in a matter of hours by giving vitamin A. This vitamin has been found in the retina in amounts which are constant at twenty gamma per gram of tissue (a gamma is one millionth of a gram) in cattle, pigs, and sheep, although it is much higher in frogs' retinae. It is apparently stored in the liver where it is found in definite amounts, but there are only traces elsewhere in the body.

By extracting the pigment layer and the choroid, high concentrations of both vitamin A and xanthophyll are found. If the extraction is done with chloroform, a substance which Dr. Wald has called retinine is found. This substance is a carotinoid and it is recovered only when the visual purple is destroyed rapidly. In light adapted animals, chloroform extractions yield only vitamin A and no retinine, while in dark adapted animals they yield vitamin A and some retinine. If dark adapted retinae are exposed to a strong light, they turn yellow and gradually fade to colorless. By extracting the yellow retina by petroleum ether the same amounts of retinine are obtained as in the dark adapted retinae extracted with chloroform. Therefore, we can conclude that chloroform and light do the same thing by breaking down the visual purple. After the color has completely faded large amounts of vitamin A and no retinine are obtained. Intermediate amounts of these substances are obtained at different stages of this proc-

ess, and there is a quantitative change of retinine to vitamin A.

Apparently vitamin A combines with a large molecule, probably protein, in the retina to make visual purple from which retinine can be obtained by light exposure. The process of breaking down the vitamin A-protein complex to vitamin A through the stage where retinine is procured is reversible, but apparently there is some loss of vitamin A. Contact with the pigment epithelium is necessary for this reverse process, and if the retina is detached from the pigment layer no visual purple is formed. In the human being the light adapted eye is entirely colorless, and the rod apparatus does not function under these circumstances.

THE NEW ENGLAND HEART ASSOCIATION

The New England Heart Association met at the Mallory Institute of Pathology of the Boston City Hospital on the evening of November 26, 1934. Dr. Soma Weiss discussed two cases of rheumatic heart disease with unusually large auricles. Postmortem examination in the first case showed an hypertrophied left ventricle with mitral stenosis and insufficiency and an enormous dilatation of the left auricle. The second case, a twenty-three year old girl, clinically showed presystolic, systolic, and diastolic murmurs over the apex and a long, harsh diastolic murmur along the left border of the sternum. The auricles were fibrillating. Postmortem revealed an enormous heart with only a slight amount of aërated lung tissue on each side. The left auricle was tremendous and there was almost a pure mitral insufficiency with slight aortic insufficiency. The curious diastolic murmur was probably aortic in origin.

Dr. Weiss then discussed the clinical course of dissecting aneurysms. A significant factor in the etiology of the ten cases studied was either arteriosclerosis or a series of peculiar necrotizing, scattered lesions in the media with cystic formation. The first manifestation of this condition is sudden pain or distress which does not radiate to the arm but which may shift to the abdomen or perhaps to the leg. Any of the branches of the aorta may be occluded leading to varied manifestations, such as hemiplegias and paraplegias. The following symptoms are frequently found in dissecting aneurysms: epigastric pain, diastolic murmur, sudden unconsciousness, pulse differences, tenderness over the abdominal aorta, a wide shadow in the region of the descending aorta on x-ray examination, a normal heart rate, and a bloody chest tap. Pain radiating to the arm, auricular fibrillation, pericardial friction rub, and typical electrocardiogram are points in favor of a diagnosis of coronary thrombosis.

Dr. Ellis discussed "The Effect of Posture on Blood Pressure." The diastolic blood pressure is a result of the peripheral resistance and is a measure of this resistance, while the systolic pressure is a measure of the output of the heart. A normal person when standing assumes a slightly lower systolic, slightly higher diastolic, and somewhat lessened pulse pressure than when recumbent. The person with the poorly adjusted circulatory apparatus tends to have a steadily rising pulse and diastolic pressure with a corresponding fall in the pulse pressure which results in cerebral ischemia, vagal stimulation, fall in pulse rate, and syncope. There are reported in the literature a few cases of postural hypotension. These people cannot stand long without fainting because their systolic and diastolic pressures fall abnormally when they are erect. The case of a woman was presented whose systolic pressure fell to eighty-five and diastolic to sixty with a rise in pulse of only two points when she stood. Several therapeutic measures were tried. Atropin had no effect; pilocarpin did not affect the blood pressure; adrenalin had only a very transitory effect. Ephedrin sulphate by mouth, although it had no effect on the blood pressure, apparently completely abolished the symptoms; while ergotamine tartrate given subcutaneously prevented the fall in blood pressure, but did not affect the symptoms. The mechanism by which ephedrin works is not clear, and apparently the physiological mechanism of this condition lies in a disturbance of the sympathetic and parasympathetic nervous systems. The etiology is unknown, although it is thought in Germany that it may be due to the pituitary.

Dr. Ferris discussed rheumatic fever in elderly patients and reported six cases, studied in the past three years, in which the first attack had occurred after the age of sixty. In the three patients who died, Aschoff bodies were found in the myocardium. Some of these patients had outstanding joint manifestations, and there was marked weakness and prostration in all cases. The disease in these is similar to that occurring in younger persons, although the joint symptoms seem to be less acute and last longer.

Dr. Capps discussed "Pressor Substances and Arterial Hypertension." Extracts of blood and urine were made with charcoal, acetone, and alcohol and then injected into cats. All pure pressor reactions from these injections came from normal urine, and the most pronounced pressor effects occurred in normal and in essential hypertension. Atropin abolished the depressor effect. The experiments suggest a pressor action of the extractions on the vasomotor centers. Dr. Capps concluded that there is a pressor substance in urine which acts centrally, but that it is present in normal urine in equal or greater amounts than in the urine of malignant hypertension, and therefore we cannot say that there is any etiological relation.

Dr. Printzmetal discussed "Electrocardiograms in Revived Human Hearts." These hearts were perfused and beat normally after death. It was found that the electrocardiogram was normal and by comparison with the electrocardiogram in dogs he believes that the difference is not due to anatomical

variations between the two species but rather is due to a difference in the relation of the heart to the rest of the body, especially because of the different contour of the chest. This conclusion was reached by placing a dog's heart in a human body and studying the electrocardiograms in different heart conditions.

Dr. Faulkner discussed "The Experience of the Boston City Hospital with Thyroidectomies for Heart Disease." In their series of nine cases, eight have been done for congestive failure and one for angina pectoris. Three are living. One of these, a case of rheumatic heart disease, was operated upon thirteen months ago; one is a hypertensive with arteriosclerotic heart disease seven months postoperative; and the other is a case in which coronary thrombosis occurred six months previous to the operation. All three are improved.

Dr. Faulkner also showed an unusual case of partial heart block with an extremely long P-R interval of 0.74 seconds, which is next to the longest on record.

Dr. Spink discussed the "Heart in Trichinosis." The incidence of this parasitic condition has been found to be as high as twenty-seven per cent of routine autopsy examinations at the Boston City Hospital, where no clinical diagnosis of the condition has been made. In certain cases it was noted that there was hypotension, gallop rhythm, an inverted T-wave in lead II, and a gradual straightening out with a resumption of the upright T-wave some weeks later. In one autopsied case there was a diffuse myocarditis and fourteen larvae were found. Electrocardiograms were done in eighteen cases and six of these showed changes, the most marked one being an inverted T-wave in lead II. One case showed a temporary intraventricular block. There may be changes in the myocardium as early as the fifth day with an eosinophilic infiltration. After the blood infection has ceased, there is no myocarditis. Death occurs usually in the fourth to the eighth week of the disease.

Dr. Weiss closed the meeting with a discussion of twenty-six additional cases of hypersensitive carotid sinus with syncope. Six of these cases were so severe that it was thought advisable to operate, and in all of these cases the attacks ceased postoperatively. Digitalis can induce dizziness and occasionally syncope as a result of sensitization of the carotid sinus reflex.

WORCESTER NORTH CANCER CLINIC

A special cancer clinical conference was held at the Burbank Hospital, November 14, 1934, from 10 o'clock A.M. to 4 o'clock P.M. with Drs. Daland and Meigs of the Pondville Hospital as consultants, and members of the Worcester North District Medical Society as guests.

Twenty-three cases, including two from the hospital wards, were presented, providing abundant material and a great diversity of interesting lesions. There were ten new cases, and thirteen old; eight were males, thirteen, females; two were presented by the clinic social worker and eight were brought or sent by guest physicians of the District Society (the ten new cases).

Diagnoses (new patients):

Primary cancer	2
Cancer with metastases	1
Recurrent cancer	2
Benign tumor	2
Mouth lesions	1
Other conditions	1
No pathology	1
	10

Buffet lunch at 12:30.

The outstanding features of this conference were its informality and the spirit of coöperation shown by all who took part in its work.

SCHEDULE FOR 1935

Burbank Hospital, Fitchburg—10 A.M.: January 8, 22; February 5, 19; March 5, 19; April 2, 16, 30; May 14, 28; June 11, 25; July 9, 23; August 6, 20; September 3, 17; October 1, 15, 29; November 12, 26; December 10, 24.

Heywood Hospital, Gardner—10 A.M.: January 15, 29; February 12, 26; March 12, 26; April 9, 23; May 7, 21; June 4, 18; July 2, 16, 30; August 13, 27; September 10, 24; October 8, 22; November 5, 19; December 3, 17, 31.

Free Examination—Any physician referring a case of suspected cancer to the Clinic will receive a letter giving diagnosis and recommendation as to treatment. If the physician so requests, treatment will be undertaken by the Clinic to which the patient is referred; otherwise the patient will be returned to his own physician with suggestions for appropriate treatment.

For further information regarding the Clinics write Social Worker, Miss Olive Twichell, 24 Mt. Vernon Street, Fitchburg, telephone 3617.

For the Worcester North Cancer Committee
WALTER F. SAWYER, M.D.,
CURTIS H. JENNINGS, M.D.,
GEORGE MOSSMAN, M.D.,
CHARLES J. LASERTE, M.D.,
FREDERICK H. THOMPSON, SR., M.D., *Chairman.*

WINTHROP COMMUNITY HOSPITAL

The next meeting of the Staff of the Winthrop Community Hospital will be held on Thursday evening, December 27, 1934, at 8:30 P.M., at the Winthrop Community Hospital.

PROGRAM

Speaker: Dr. Frank Lahey.

Subject: Diagnosis, Newer Developments and Mangement of Thyroid Disease, illustrated by Lantern Slides.

Clinical discussion.

Question-box period.

Business meeting: Analysis of Hospital Service.

All physicians cordially invited to attend and to participate in the discussion.

JACOB J. ABRAMS, M.D., *Secretary.*

NEW ENGLAND HEART ASSOCIATION

The next meeting of the New England Heart Association will be held at the Peter Bent Brigham Hospital, Boston, Mass., Monday, January 7, 1935, at 8:15 P.M.

All members of the New England Heart Association and interested physicians are invited to attend.

JAMES M. FAULKNER, M.D., *Secretary.*

SOCIETY MEETINGS CONGRESSES AND CONFERENCES

CALENDAR OF BOSTON DISTRICT FOR THE WEEK BEGINNING MONDAY, DECEMBER 24, 1934

Thursday, December 27—

†4:30 P.M. Surgical Clinic. Peter Bent Brigham Hospital Amphitheatre.

Saturday, December 29—

*10-12. Medical Staff Rounds. Dr. Christian. Peter Bent Brigham Hospital.

*Open to the medical profession.
†Open to Fellows of the Massachusetts Medical Society.

December 21—The New England Roentgen Ray Society will meet at the Boston Medical Library at 8:15 P.M. "The Lateral X-Ray Film in the Diagnosis of Pathology in the Region of the Middle Lobe." Dr. Donald S. King.

December 27—Winthrop Community Hospital. See page 1177.

January 7—New England Heart Association. See notice above.

MASSACHUSETTS DIETETIC ASSOCIATION

January 8—Tuesday, 8 P.M. "Careers and Natural Abilities," Professor Johnson O'Connor, Human Engineering Laboratory, Stevens Institute of Technology, Hoboken, N. J.

February 12—Tuesday, 8 P.M. "Diabetic Children," Dr. Priscilla White, Joslin Diabetic Unit.

March 12—Tuesday, 8 P.M. "The Effect of Diet on Anemia," Dr. Lewis Diamond, Instructor in Medicine, Harvard University Medical School, Associate Physician, Children's Hospital.

March 19—Tuesday, 2 P.M. Field Trip: Visit Storehouse, First National Stores.

April 9—Tuesday, 8 P.M. "Small Hospital Problems," Miss Margaret Copeland, Superintendent, Free Hospital for Women.

January 11—William Harvey Society. Speaker: Dr. Charles F. McKhann. Subject: "Immune Substances in Placental Extract."

April 29 - May 3, 1935—The American College of Physicians will meet at Philadelphia. For information address Mr. E. R. Loveland, Executive Secretary, 133-135 South 36th Street, Philadelphia, Pa.

June, 1935—Medical Library Association will meet in Rochester, N. Y. For details address the Secretary: Miss Frances N. A. Whitman, Librarian, Harvard University Schools of Medicine and Public Health, Boston, Mass.

DISTRICT MEDICAL SOCIETIES

ESSEX NORTH DISTRICT MEDICAL SOCIETY

The Semi-Annual Meeting will be held in January and the Annual Meeting in May, time, place and subject to be announced.

E. S. BAGNALL, M.D., Secretary.

FRANKLIN DISTRICT MEDICAL SOCIETY

Meetings will be held on the second Tuesday of January, March, and May at the Weldon Hotel, Greenfield, Mass.

CHARLES MOLINE, M.D., Secretary.
Sunderland.

MIDDLESEX EAST DISTRICT MEDICAL SOCIETY

January 9, 1935—Melrose.
March 13, 1935—Wakefield.
May 8, 1935—Winchester.

K. L. MACLACHLAN, M.D., Secretary.
1 Bellevue Street, Melrose.

PLYMOUTH DISTRICT MEDICAL SOCIETY

January—Goddard Hospital.
March—Plymouth County Hospital.
April—Lakeville Sanatorium.

SUFFOLK DISTRICT MEDICAL SOCIETY

January 23, 1935—General Meeting in association with the Boston Medical Library. Speaker and subject to be announced later.

March 27, 1935—Clinical Meeting at the Boston Lying-In Hospital.

April 24, 1935—Clinical Meeting at the Children's Hospital.

The medical profession is cordially invited to attend all of these meetings.

ROBERT L. DeNORMANDIE, M.D., President.
GEORGE P. REYNOLDS, M.D., Secretary.
HENRY T. HUTCHINS, M.D., Boston Medical Library.

WORCESTER DISTRICT MEDICAL SOCIETY

January 9, 1935—Wednesday evening. Worcester City Hospital, Worcester, Mass. 6:30 P.M.: Buffet supper. 7:30 P.M.: Scientific program and business session. Announcement of subjects and speakers to be presented at a later date. Buffet supper complimentary by the Hospital.

February 13, 1935—Wednesday evening. Worcester State Hospital, Worcester, Mass. 6:30 P.M.: Dinner. 7:30 P.M.: Scientific program and business session. Announcement of subjects and speakers to be presented at a later date. Dinner complimentary by the Hospital.

March 13, 1935—Wednesday evening. The Memorial Hospital, Worcester, Mass. 6:30 P.M.: Buffet supper. 7:30 P.M.: Scientific program and business session. Announcement of subjects and speakers to be presented at a later date. Buffet supper complimentary by the Hospital.

April 10, 1935—Wednesday evening. Worcester Hahnemann Hospital, Worcester, Mass. 6:30 P.M.: Dinner. 7:30 P.M.: Scientific program and business session. Announcement of subjects and speakers to be presented at a later date. Dinner complimentary by the Hospital.

May 8, 1935—Wednesday afternoon and evening. Annual Meeting of the Worcester District Medical Society. The time and place of this meeting will be announced later.

ERWIN C. MILLER, M.D., Secretary.
27 Elm Street, Worcester.

BOOKS RECEIVED FOR REVIEW

The Science and Practice of Surgery. By W. H. C. Romanis and Philip H. Mitchiner. Fifth Edition. Volume I. General Surgery. 789 pp. Philadelphia and London: Lea & Febiger. Volume II. Regional Surgery. 962 pp. Philadelphia and London: Lea & Febiger. Volumes I and II, $13.00.

The Doctor in History. By Howard W. Haggard. 408 pp. New Haven: Yale University Press. $3.75.

The Rockefeller Foundation. Annual Report. 1933. 477 pp. New York: The Rockefeller Foundation.

Amebiasis and Amebic Dysentery. By Charles F. Craig. Illustrated. 315 pp. Springfield and Baltimore: Charles C. Thomas. $5.00.

The Practice of Dietetics. By L. H. Newburgh and Frances Mackinnon. 264 pp. New York: The Macmillan Company. $4.00.

Human Personality and the Environment. By Charles Macfie Campbell. 252 pp. New York: The Macmillan Company. $3.00.